MARKETING FLORIDA *ASPARAGUS PLUMOSUS* FERNS

By

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CHAPTER I

INTRODUCTION

Importance

Asparagus plumosus, although a member of the lily family and not a true fern, is nevertheless known as a "fern" by most people in the horticultural specialty business. The true plant name for this product, Asparagus plumosus nanus, is probably not known to many of the florists who purchase and sell it daily. For simplicity it will be referred to as plumosus fern throughout this dissertation.

The plumosus fern is one of several items of greenery used for ornamental purposes to compiement flowers in corsages, wreaths and bouquets. Of the various flower-supporting greens, plumosus ferns are believed to be the most important in terms of the volume shipped to market. From 1929 to 1953, as personal consumption expenditures for flowers and other ornamental plants doubled, the production and marketing volume of plumosus fern also increased to meet the expanded market demand.[1]

The production of plumosus ferns in the United States is largely concentrated in Florida. The 1950 Census of Agriculture indicated that Texas, Louisiana, Kentucky, California and other states together produced 5 percent while Florida produced at

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[1] Warren K. Trotter, Problems in Marketing Florist Crops, Cornell University Agricultural Experiment Station A.E. 983 (Ithaca: 1955), p. 25.

least 95 percent of the nation's supply.[2]

The value of sales of plumosus ferns was reported at $2,716,802 in 1949 by the Special Census of Horticultural Specialties.[3] The report noted that 213 growers, each of whom had sales of not less than $1,000, produced 344,601,212 sprays of plumosus ferns. Their value was more than a tenth of that reported for all marketings of flowers and ornamental horticultural crops in Florida.

No secondary data or other information pertaining to the plumosus fern industry are published by governmental or other data-gathering agencies. The available data most relevant to the industry which are listed in the Special Census report are those on production volume, value of sales and the number of establishments producing ferns in various states. Annual estimates are made by the U. S. Department of Agriculture on the cash receipts from the sales of all nursery and greenhouse products.[4]

The growing importance of horticultural specialties as a component of farm income has been recognized by research administrators in the last decade. The U. S. Department of Agriculture and many state experiment stations have put considerable resources into research work on marketing florists' products. The present

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[2]U. S. Bureau of the Census, United States Census of Agriculture: 1950, Horticultural Specialties, Vol. V, Part 1 (Washington: U.S. Government Printing Office, 1952), p. 84.

[3]Ibid.

[4]The Agricultural Marketing Service estimated total cash receipts derived from Florida horticultural specialty crop marketings to be $31,818,000 in 1956. See The Farm Income Situation (FIS - 165) (Washington: U.S. Agricultural Marketing Service, September, 1957), p. 57.

study is a part of Research Project 679 of the Florida Agricultural Experiment Station. The project is concerned with the marketing practices of flowers and ornamental plants in Florida.

Objectives and Scope of Study

Objectives

The purpose of this study is to determine and analyze the marketing practices used in the plumosus fern industry in Florida. The specific objectives of the study are as follows: (1) to estimate acreage, quantity produced and receipts of the industry; (2) to determine the type, extent of use and effectiveness of various selling practices; (3) to determine the scope of market distribution; (4) to estimate costs and returns to growers; and (5) to point out major problems of the industry and some of their possible solutions. In short, it is a composite study of the efficiency of the marketing practices of the Florida segment of the plumosus fern industry.

Scope of study

This study is largely concerned with estimates of acreage, quantity of ferns produced and returns to the plumosus fern industry, marketing practices, the efficiency of various marketing methods, market distribution, methods of transportation, growers' costs and returns, the major problems of the fern industry and the nature of seasonal variations in fern supply and demand.

There are ten chapters in this study. Chapter I serves to indicate the importance, purposes and methods used in this study. Chapter II presents the historical background of the plumosus fern industry in Florida and the practices utilized in

production and marketing.

Supply aspects of the Florida plumosus fern industry are analyzed in Chapter III. The areas of production, distribution of acreage, trends in acreage, trends in shipment and estimated production volume are all presented in this chapter.

Chapter IV is concerned with the demand aspects for plumosus ferns. The demand for plumosus ferns is affected to a great extent by competition with other greeneries. The prices received for plumosus ferns over a period of years are compared with prices received and paid by all farmers. This chapter is also concerned with the status of competing crops and the marketing receipts of the industry.

In Chapter V an analysis is made of the volume shipped to different market outlets and of the prices received in each outlet.

Chapter VI is concerned with the scope of distribution in terms of the volume shipped to the different areas and states, methods of transportation, an analysis of prices received in cities of varying size and distance and express rates in terms of gross returns and volume shipped.

A general picture of growers' costs and returns in various size groups is presented in Chapter VII. A case study relating to per-unit costs and returns is also contained in this chapter.

Chapter VIII pinpoints the major problems in the plumosus fern industry. Problems of market information, the seasonal character of supply and demand, commission sales, standard grades and competition from other greenery all stand out as stumbling blocks to orderly marketing. The problems of production which involve insects, worms, diseases, soil nutrition and weed control are also briefly

covered.

Several suggestions for improved marketing practices are made in Chapter IX. Part of the discussion relates to the organizational requirements for carrying out these suggestions.

The summary and conclusions of this study appear in Chapter X.

Method of Procedure

Planning study

Published information related to the marketing of florists' products and some unpublished materials concerning plumosus ferns were reviewed. Several preliminary field trips were made to visit growers in order to become acquainted with the production and marketing practices followed in the fern business.

A tentative research project was drawn up. The area covered in this study includes ten counties in Florida--Volusia, Lake, Putnam, Seminole, Marion, Palm Beach, Brevard, Duval, St. Lucie and Hillsborough--in which plumosus ferns were produced. The major fern producing area--Volusia, Lake, Seminole and Putnam Counties--was the region in which this study was concentrated. These counties form a contiguous area; other plumosus producers were scattered in the remaining six counties and accounted for a relatively small amount of the total fern production.

The sampling unit in this study was the individual grower. A grower was defined as an individual who owned or leased land utilized for the production and marketing of plumosus ferns. A list of growers was compiled through interviews and correspondence with county agents, grower supply firms and growers themselves.

This list of growers contained the names of 210 operators in Volusia, Lake, Putnam and Seminole Counties and 24 in other counties. Growers were stratified into three groups according to size of fernery.[5] These three strata were composed of small, medium-sized and large growers. The stratum of small growers contained those who had ferneries between 0.5 to 9.99 acres; medium-sized growers from 10 to 19.99 acres; and large growers 20 acres or more. A sample was designed which involved the obtaining of data by personal interview from all large growers, 50 percent of the medium-sized growers and 10 percent of the small growers. There were relatively few large growers but many small ones. The cost of interviewing a large grower was not significantly different from that of interviewing a small grower. It was desirable to take a high percentage of large ferneries in the sample in order to reduce the variability of the estimate.

The random method of sampling was applied in selecting small and medium-sized growers. A sample of growers was devised by selecting all 24 large growers, 15 medium-sized growers (with 6 alternates) and 29 small growers (with 10 alternates).

After the sample had been designed and the selected growers interviewed, a revised list of fern growers was made by a group of growers in the major plumosus fern producing area who were endeavoring to obtain approval for a proposal to form a State Fern Commission. This group compiled what was presumed to be a complete list of fern growers. As previously noted, the list obtained initially had the names of 210 operators in Volusia, Lake, Putnam and Seminole Counties and 24 in other

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[5]Growers outside the four-county area of Volusia, Lake, Putnam and Seminole were not included in the sample design.

counties. The revised list contained 376 names for the four major counties. Nearly all of the additions were in Volusia County. All of these additional growers were classified in the small size group. The acreage of plumosus ferns in Volusia County was estimated at 1,350 acres; this figure was based on the data previously obtained and upon the facts provided by the Volusia County Agricultural Agent and several leading growers. It was decided not to redraw the sample of small growers and to make additional field interviews because there was considerable uniformity in the data obtained from the small growers. The parameters for this group of small growers for whom no definite data were obtained were estimated from the data of small growers in that county for whom information was available.

The data obtained for this study included acreage trends in recent years, quantities sold, average prices received, method of sale, method of transportation, type of outlet, destination and date of sale, marketing costs and growers' opinions on improving marketing practices. A general questionnaire for field interviewing was prepared and pre-tested. As a result of the experience in the pre-test, several changes were made in the field questionnaire.

Collecting data

Data were collected through personal interviews, most of which were conducted during the summer of 1956, with each listed grower, either manager or owner, who was selected in the sample. A detailed questionnaire (see Appendix) was used in the interviews to obtain data on selling practices, quantities sold and prices received, methods of transportation and market outlets. A sub-sample of seven growers was

contacted and asked to provide, from their sales invoices, detailed data on prices, shipments, outlets and other marketing practices during the period from January, 1955, to August, 1956.

The number of growers interviewed in the four county area was 66. Fifty growers provided data classified as satisfactory (Table 1). Sixteen growers provided data which were only partially complete (Table 2). Of this group, nine had leased their ferneries to other growers, four had gone out of business and three were uncooperative. In analyzing the data, it was assumed that a like proportion of growers in the appropriate size groups had leased their ferneries or gone out of business. Adjustments between size groups were made to take these relationships into account.

TABLE 1

DISTRIBUTION OF GROWERS INTERVIEWED WHO FURNISHED SATISFACTORY DATA IN MAJOR FERN PRODUCING COUNTIES

Size Group	Number of Growers	Distribution of Sample Growers by County			
		Volusia	Lake	Putnam	Seminole
Small (0.5 - 9.99 acres)	18	13	1	4	...
Medium (10 - 19.99 acres)	15	8	6	1	...
Large (20 acres and above)	17	10	2	1	4
All Growers	50	31	9	6	4

TABLE 2

DISTRIBUTION OF GROWERS INTERVIEWED WHO SUPPLIED PARTIAL OR INCOMPLETE DATA IN MAJOR FERN PRODUCING COUNTIES

Size Group	Number of Growers	Distribution by County		
		Volusia	Lake	Putnam
Small	12	6	4	2
Medium	2	2	...	...
Large	2	1	1	...
All Growers	16	9	5	2

Of the 24 growers in counties other than Volusia, Lake, Seminole and Putnam, 13 were interviewed. Most of these interviews were made during the fall of 1956. Many of these growers were small and did not supply all the information requested. Nevertheless, sufficient data were supplied to permit estimates to be made of the major parameters studied. Data on the acreage of growers not interviewed were obtained from various sources. One interview, that with a large grower in Marion County, was made during June, 1957; in obtaining the list of fern growers no cooperator had given any record of this fernery.

Considerable information was obtained from the Railway Express Agency office at Pierson, Volusia County. This is the largest plumosus fern producing center in Florida. Daily records of fern shipments for August, 1956, were obtained with respect to destination, volume, weight and freight charges, shipper and buyer's

name. Additionally, records of shipping volume from 1949 to 1956 were acquired, according to the availability, either on a daily or on an annual basis.

Some minor information was gathered from The Florists' Review, correspondence with agriculturists in the West Coast area, bulletins[6] related to the production of plumosus ferns and Florida daily newspapers. Although these materials are not solely related to marketing practices, they served to provide a better understanding of the operations in the whole industry.

As a matter of interest, the writer of this dissertation, because of his Chinese background and employment experience, reviewed a number of Chinese marketing publications.[7] The reading was helpful in understanding the nature of an unorganized industry and the possibility for improving its marketing practices.

Analyzing data

Data collected from the general questionnaires, the railway express office and sale invoices were tabulated and analyzed to show the quantity and value of plumosus fern sold by various selling practices to outlets in different locations. Comparisons were made of the stability and seasonality of sales and the net income received through different methods of sale.

Analysis was made of the extent to which sales were made to various markets. The marketing volume was classified according to states and methods of sale.

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[6] W. J. Platt, Asparagus Fern Culture, Florida Agricultural Extension Service Bulletin 153 (Gainesville: 1952) and R. Stoutamire, Growing Asparagus Plumosus in Florida, Florida State Department of Agriculture Bulletin 12 (Tallahassee: 1948).

[7] See bibliography.

Comparisons of costs and returns were made between the different sizes of growers. Due to lack of sufficient data, this comparison is an approximate one.

The statistical relationship between volume shipped and prices received was explored. Production and sales data obtained were expanded to develop estimates of the total producing acreage, volume of sales and income received from marketing plumosus ferns in Florida.

CHAPTER II

SOME CHARACTERISTICS OF THE FLORIDA FERN INDUSTRY

Historical Development

Plumosus ferns have been grown in Florida for a period of 60 years. Whether the plant was initially grown in Lake County or in Volusia County is a controversial point. Residents of these two areas claim that plumosus ferns were first grown in their county. Each of these groups has a history of places and persons to prove its claim. It would seem appropriate to give credit to both areas since their developments appear to have been independent and their starting points close together.

One account concerns John James and his wife.[1] James had been a florist in England before he moved to Florida with his family in 1886. He was employed in 1892 as manager of an orange grove in Yalaha, Lake County, and built a small greenhouse similar to his former structure in England. Along with other seeds, plumosus fern seeds were purchased in the North to be planted in the greenhouse. It was from these and from other seeds sent from Italy that the plumosus industry began. Fern sprays were cut and shipped to northern markets. After 1895 James quit his job as manager of the orange grove and operated the plumosus fernery independently. The business developed and was passed on to James' daughters--Mrs. D. J. Whitt and Mrs. M. J. Morris. Mrs. Whitt now operates 25 acres,

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[1] "Pioneer in Plumosus," The Florists' Review, Vol.62, No.1606, September 6, 1928, p. 37.

included among which is the first half acre planted by her father.

Another account claims that Peter Pierson and his son, Eugene, of Pierson, Volusia County, were the first plumosus fern producers in Florida.[2] With the encouragement of his brother, Andrew Pierson, a florist in Connecticut, Peter Pierson established the first plumosus fern slat house in 1904 on a quarter acre of land. A second slat house was constructed on higher ground in 1906. The practice of growing each spray on a string was soon abandoned and the method of cutting and packing sprays used today was established. F. D. Harper established the third slat house in Volusia County in 1907. It was not until the late 1920's that hammock type ferneries gradually emerged.

The production of plumosus ferns in Florida has a long history. Most fern growers have been engaged in the business for more than ten years. It requires two years for a plumosus fern plant to reach maturity. It is not considered good policy for a new grower to plant a large acreage during any one year due to the limitation of market outlets. Once the land is cleared and capital invested, it is difficult to withdraw from the business because of the long run nature of production. Most growers start with a small acreage and gradually build it up to their desired level. Generally speaking, of 50 growers interviewed in this study, the larger growers were ones who had been in the business over a long period of time. Most large growers began with a small acreage and have gradually increased their acreage by plantings and purchases of other ferneries.

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[2]Information obtained from Volusia County Agricultural Agent.

Of 17 large growers in the major fern producing counties, 12 have been fern producers for over 20 years; 11 out of 15 medium-sized growers have been in the business between 11 and 30 years; and 13 out of 18 small growers have engaged in fernery operations from 1 to 20 years (Table 3). It would appear that growers, as they gained experience and were successful in the fern business, have been able to enlarge their scale of operations.

TABLE 3

NUMBER OF YEARS GROWERS INTERVIEWED IN MAJOR FOUR COUNTY AREA HAVE BEEN IN FERN BUSINESS

Number of Years in Fern Business	Number of Growers in Different Size Groups			
	Small Size	Medium Size	Large Size	Total
1 - 10	8	3	3	14
11 - 20	5	6	2	13
21 - 30	4	5	8	17
31 - 40	1	1	4	6
Total	18	15	17	50

Production Practices

Production of plumosus ferns in Florida usually begins from seed imported from Italy or California or from seed produced in the state. Seeds are sown as early as possible in the Spring in seedbeds located on soil similar to that used for ferneries. From 10,000 to 13,000 seeds are normally contained in a pound; these seeds usually produce 5,000 to 6,000 plants. The young plants are generally kept in the seedbed

for at least six months before being transferred to the permanent production area.

Shading is an important element in the culture of plumosus ferns. The nature of the plumosus plant is such that it requires a moist and cool atmosphere for growth. Shading makes it possible for the soil to retain moisture longer and protects the greenery from sunburn. With adequate shading and good soil conditions, plumosus ferns usually remain evergreen and in good shape.

Shade for ferns is usually provided either by slat houses or by natural shade. Slat houses are constructed almost entirely of cypress slats, which last from eight to ten years. The minimum construction cost of a slat house has been estimated to be $4,000 per acre.[3] Ferns grown under slat houses usually have higher yields per acre than those planted under natural shade. This is especially true in the winter season. Slat houses provide better protection from frost; kerosene burners may be used more efficiently inside the slat house. Ferns are planted in the natural shade of a wooded area in hammock type ferneries. Live oak trees usually provide this type of shade. The soil should be carefully prepared to remove excess roots and to provide a suitable plant bed. Ferns under natural shade usually require a larger quantity of fertilizer but yield a product of a better grade and quality in the summer than those planted under slat houses. In recent years young oak trees have been planted in many of the slat houses throughout Volusia County. In time the slat house will decay and lose its shading value but the young oaks will be large enough to take over the shading function.

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[3]"Pierson Top Fern Production Area," The Florida Times Union (Jacksonville, Florida), Vol. 91, June 17, 1956, p. 20.

The natural life of a plumosus fern plant, if given adequate care, is generally from 20 to 30 years. After transplanting from seedbeds to the production areas in slat houses or in hammocks, young plants take another six months or longer to grow before they are ready to be cut for sale. From seed sowing to plant maturity may take as much as two years.

Each acre of a fernery is planted with 30,000 to 50,000 plants, depending upon the condition of the soil, shade and other factors. Fertilization is required three to four times each year. Spraying 10 to 20 times a year is needed for controlling certain insects. Five to six dustings a year to kill worms are required. Weeding is necessary during much of the year. Irrigation is not generally needed since Florida rainfall is usually sufficient for plumosus ferns. The frequency and volume of materials used in fertilizing, spraying and dusting depends largely upon the individual growers' financial ability and production knowledge as well as the market demand situation. Large and medium-sized growers generally have more resources for use as capital investment and for operating their ferneries. As a consequence, they are usually able to produce ferns of a better quality than those of small growers.

Mowing and pruning of ferns are sometimes required after a freeze. In addition, when the market is glutted, growers often do not cut ferns to be sold. Instead, they remove the valuable top growth of sprays in order to have the fernery in condition for top production later. Growers may mow off the excess quantity of ferns in order to keep the fernery in year-round production.

The production of plumosus ferns is a highly specialized and intensive operation. Most growers operate their ferneries independently, however, many of them are also

operators of other types of horticultural enterprises such as citrus groves. The center of the plumosus fern industry is located on the northern fringe of the citrus belt in Florida. A long range of slat houses or hammock type ferneries can often be seen adjacent to citrus groves.

Marketing Practices

Marketing may be defined as beginning with the harvesting of the fern crop. Harvesting is done throughout the year. Each acre may yield 150,000 to 350,000 sprays yearly. Ferns are cut and bunched into sprays by hand. The length of a spray is from 20 to 30 inches. Fern cutters are paid either by the hour or by the quantity of sprays cut. The average wage for fern cutters is from $0.80 to $1.50 per hour. If the wage is paid by the quantity of ferns cut, the wage rate usually is $1.50 per 1,000 sprays. A good fern cutter may cut 1,000 sprays per hour. After the sprays are cut, they are either bunched in the field or sent by truck to a packinghouse where they are processed for market.

At the packinghouse, the ferns are normally placed in cold water to prevent shedding. Sprays are then graded according to length and shape and placed in bunches of 50 sprays. Spoiled and malformed sprays are usually discarded. Although the United States Department of Agriculture established standard grades for plumosus ferns in 1930, the grading process is usually carried out without following definite standards. Many growers do not follow any kind of grading procedure. They wrap 50 sprays of different lengths and quality in sphagnum moss to form a bunch. The fern packed in this manner is called greenhouse run.

Ferns are packed in various sizes of containers. The container or crate is

made of wood veneer and is bound by wire. Each crate is lined with several thicknesses of newspaper and a piece of ice is placed inside. The weight of ice varies with the size of crate, shipping distance and season. The most common size of crate used is the 1,000-spray (20-bunch) container. This requires a piece of ice weighing from 25 to 30 pounds.

After ferns are packed in crates, a label is placed on each crate indicating its destination, name of receiver, address and name of sender and number of sprays in the crate. The crates are hauled by truck to a nearby railway express station. After being checked in and weighed, the crates are placed in the storeroom or on the express station platform for loading. The fern is normally shipped the day it is cut in order to preserve its freshness.

Shipping charges are usually paid by the receiver in the northern market if the ferns are shipped on an f.o.b. basis. On consignment sales express charges are usually paid by wholesale commission florists who deduct transportation charges from sales receipts after sales have been made. If sales receipts are insufficient to cover transportation charges, the commission florist bills the shippers for the amount of the deficit.

Most of the plumosus fern produced in Florida is shipped to out-of-state markets. Shipments to some states require inspection by the State Plant Board as a precaution against plant disease. Quite a few growers indicated that shipments to Texas, Oklahoma and Colorado required that a State Plant Board sticker be placed on the crates to show that they passed inspection.

Marketing plumosus ferns, like other florists' products, is a highly specialized

business. The market for plumosus ferns is through a distinct system of wholesale and retail florists' markets all over the nation. Marketing problems arise from the seasonal nature of demand and supply, consignment settlements, grades, competition from other greens and between growers and from other sources. At the present time the fern industry is not so organized that producers work together toward the solution of these problems.

CHAPTER III

SUPPLY ASPECTS OF THE FLORIDA PLUMOSUS FERN INDUSTRY

Areas of Production

The producing area for plumosus fern in Florida is largely concentrated in the east central section of the state with small acreages scattered in counties on the northeastern and southeastern coasts (Figure 1). The major plumosus fern producing counties are Volusia, Lake, Putnam and Seminole. This area is the center of the plumosus fern industry. Marion and Duval Counties are on the fringe of the main fern producing area.

Scattered fern producing areas are located in Brevard, St. Lucie, and Palm Beach Counties on Florida's East Coast. Several ferneries are located in Hillsborough County on the West Coast. A large fernery in Polk County went out of business during the past few years. The counties in which plumosus ferns are produced have sites with certain combinations of soil types and weather conditions which make them desirable for fern growing. Plumosus ferns grow well on a variety of soils but they prefer a sandy loam with good drainage conditions. The plants also prefer a topography sloping toward the south or in a southeasterly direction for the purpose of providing good air drainage for protection from cold in the winter. The more northern parts of Florida are susceptible to considerable cold damage during the winter.

Figure 1.--Distribution of plumosus fern acreage in Florida, 1955-56.

Numbers denote acreage in each plumosus fern producing county.

Sufficient air drainage is not provided in many areas in South Florida. The best sites for plumosus ferneries are in east central Florida.

Distribution of Acreage

The acreage and number of ferneries by counties, as determined in this study, are listed in Table 4. Volusia, Lake, Putnam and Seminole are the four major producing counties of plumosus ferns in Florida. These four counties contain about 92 percent of the total plumosus fern acreage in Florida. The remaining 8 percent is scattered throughout Marion, Palm Beach, Brevard, Duval, St. Lucie and Hillsborough Counties.

TABLE 4

ACREAGE AND NUMBER OF PLUMOSUS FERNERIES
BY COUNTIES IN FLORIDA, 1955-56

County	Ferneries	Acreage		
		Total	Proportion of Total	Average Size
	Number	Acres	Percent	Acres
Volusia	309	1,350.0	65.1	4.4
Lake	42	313.2	15.1	7.5
Putnam	21	129.0	6.2	6.1
Seminole	4	114.0	5.5	28.5
Marion	5	84.3	4.1	16.9
Palm Beach	10	22.8	1.1	2.3
Brevard	3	28.0	1.4	9.3
Duval	1	25.0	1.2	25.0
St. Lucie	3	4.2	.2	1.4
Hillsborough	2	2.0	.1	1.0
Total	400	2,072.5	100.0	5.2

Volusia County is the largest plumosus fern producing center in the nation. Three-fourths of the ferneries, with 65 percent of the plumosus fern acreage in Florida, are located in Volusia County. Lake, Putnam and Seminole Counties are next in importance in terms of acreage. Each of these four major counties has in excess of 100 acres in plumosus ferneries. In the 1955-56 season Florida had a total of 400 ferneries and 2,072 acres in plumosus fern production.

The average fernery size was small in most counties. (Data on average sizes are shown in the right hand column of Table 4.) There were only three counties in which the average-sized fernery exceeded ten acres. The average-sized operation in the plumosus fern industry in Florida was approximately 5 acres.

For convenience in computing and comparing the efficiency of marketing practices among the 400 ferneries, they were grouped into three strata according to their size--small, medium-sized and large growers--in Table 5.

TABLE 5

ACREAGE AND NUMBER OF FERNERIES BY SIZE OF GROWERS IN FLORIDA, 1955-56

Grower Size Group	Ferneries		Acreage		
			Total		Average Per Grower
	Number	Percent	Acres	Percent	Acres
Small (0.5 - 9.99 acres)	345	86.2	985.0	47.5	2.9
Medium (10 - 19.99 acres)	31	7.8	368.5	17.8	11.9
Large (20 acres and over)	24	6.0	719.0	34.7	30.0
All Growers	400	100.0	2,072.5	100.0	5.2

Of the 400 growers of plumosus ferns in Florida, 86.2 percent were classified as small growers. The small growers had a total of 985 acres--47.5 percent of the total. The average size for small growers was 2.9 acres.

The number of medium-sized growers made up 7.8 percent of the total. These had 17.8 percent of the total acreage. The medium-sized growers had an average-sized fernery of 11.9 acres. Although there were only 24 large growers, they operated 34.7 percent of the total acreage in plumosus ferns. The average large grower had a 30 acre fernery.

The estimated acreage of the industry was 2,072 acres in 1955-56. This figure was derived by grouping the data for all growers in the population list and, as noted earlier, utilizing the figure of 1,350 acres as the area in plumosus ferns in Volusia County.

Trends in Acreage

Plumosus fern production in Florida was begun shortly before the turn of the century. Since that time the product has proved its adaptability to Florida's growing conditions and its profitability in the florists' markets of the nation. According to unverified figures quoted by Platt, there were 800 acres in Florida in 1930;[1] the figure had jumped to some 2,000 acres by 1952.[2] According to the data obtained from the growers interviewed, a slight increase in acreage was noted from 1951 to 1956 (Table 6). In general, the total acreage for small growers has tended

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[1] W. J. Platt, op. cit., p. 8.

[2] Ibid., p. 1.

TABLE 6

ACREAGE TREND, BY SIZE GROUPS, OF 50 GROWERS INTERVIEWED IN VOLUSIA, LAKE, SEMINOLE AND PUTNAM COUNTIES, 1951-52 TO 1955-56

Size Group	Period				
	1951-52	1952-53	1953-54	1954-55	1955-56
	Acres	Acres	Acres	Acres	Acres
Small	91.8	88.2	90.0	94.2	89.2
Medium	182.5	182.5	188.5	190.5	209.5
Large	564.0	564.0	573.0	596.0	613.5
Total[a]	838.3	834.7	851.5	880.7	912.2

[a]Not an estimate for all growers.

downward. The medium-sized growers have slightly increased their acreage. The large growers have continued to expand their total acreage.

The declining trend of the small growers versus the upward trend of the medium-sized and large growers indicates a probable shifting of acreage from small growers to medium-sized and large growers. Many small growers were caught in the unfavorable market situation of recent years and went out of business. It is quite probable that many large operators expanded their ferneries by purchasing fern acreages from small growers.[3]

County acreage trends of the 50 growers interviewed in the four major counties are shown in Table 7. These four counties all showed slight increases in acreage,

[3]The estimated acreage of the plumosus fern industry in past periods is not made here because the information at hand is not sufficient to make an objective evaluation of the extent of growers' entering and leaving the industry.

TABLE 7

ACREAGE TRENDS OF 50 GROWERS IN FOUR MAJOR PRODUCING COUNTIES, 1951-52 TO 1955-56[a]

County	Period				
	1951-52	1952-53	1953-54	1954-55	1955-56
	Acres	Acres	Acres	Acres	Acres
Putnam	64.5	62.5	71.5	68.5	70.5
Lake	169.5	170.5	170.5	170.5	176.5
Seminole	101.0	101.0	101.0	116.0	116.0
Volusia	503.3	500.7	508.5	525.7	549.3
Total	838.3	834.7	851.5	880.7	912.3

[a]Not an estimate for all growers.

but the increases were all below 15 percent for the past five years. The industry appears to be growing in terms of acreage but the growth has been relatively slow.

Production of plumosus ferns in Florida is in two types of ferneries--slat houses and natural shade. Slat houses are sheds which provide shade for ferns and are almost entirely constructed of cypress wood. The natural shade type fernery is located in wooded areas where natural or planted evergreen trees provide shade; most such ferneries are in lowland hammocks. Nevertheless, many ferneries on high ground are shaded by trees. Many growers have planted trees in slat houses in order to transform lath shade into natural shade. Slat houses were used by growers during the early years of the fern industry; however, during the last 15 years the fernery area covered by natural shade has increased faster than that under slat houses.

Among the small growers, slat house acreage has tended to decrease in recent

years but there has been a slight increase of hammock type acreage (Table 8). Medium-sized growers showed an upward trend in both slat house and hammock type ferneries, but the rate of increase in slat house acreage was a little higher than the increase in hammock type acreage. Large growers showed an upward trend both in slat house and hammock type ferneries but the rate of increase in hammock type acreage was greater than in slat house acreage. In general, the acreage of hammock type ferneries in the entire industry appears to have increased faster than that of slat house ferneries during the past five years.

A breakdown of slat house and hammock type ferneries by counties indicates (Table 9) that the trend of hammock type acreage in each county has an upward movement except in Lake County where the acreage has remained constant. The slat house acreage was unchanged for Putnam and Seminole Counties, but there was a slight increase in Lake and Volusia. In the 1955-56 season, Volusia's acreage was 40 percent lath house and 60 percent hammock; Seminole County, 87 percent lath house and 13 percent hammock; Lake County, 93 percent lath house and 7 percent hammock; and Putnam County, 23 percent in lath house and 77 percent in hammock. The ratio of slat house to hammock fern acreage in these four counties was 5 to 4 in the 1955-56 season.

Trends in Shipments

The supply of plumosus ferns sent to market in recent years can be illustrated by the volume shipped from the Pierson Railway Express Agency from 1949 to 1956. Pierson is the largest producing and shipping center for plumosus ferns in Florida. Roughly one-third to two-fifths of the fern supply is estimated to come from Pierson.

TABLE 8

ACREAGE TREND REPORTED BY 50 GROWERS IN FOUR MAJOR COUNTIES BY SIZE AND TYPE OF FERNERY, 1951-56[a]

Years	Small Growers			Medium Growers			Large Growers		
	Slat	Hammock	Total	Slat	Hammock	Total	Slat	Hammock	Total
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
1951-52	43.5	48.3	91.8	118.5	64.0	182.5	319.5	244.5	564.0
1952-53	38.5	49.7	88.2	118.5	64.0	182.5	319.5	244.5	564.0
1953-54	39.5	50.5	90.0	124.5	64.0	188.5	323.5	249.5	573.0
1954-55	39.2	55.0	94.2	122.5	68.0	190.5	323.5	272.5	596.0
1955-56	37.2	52.0	89.2	136.5	73.0	209.5	326.0	287.5	613.5

[a]Growers interviewed only; not an estimate for all growers.

TABLE 9

ACREAGE TREND OF 50 GROWERS BY COUNTIES AND BY TYPE OF FERNERY, 1951-56[a]

Years	Slat	Hammock	Total	Slat	Hammock	Total
	Acres	Acres	Acres	Acres	Acres	Acres
		Volusia			Lake	
1951-52	207.5	295.7	503.2	156.5	13.0	169.5
1952-53	201.5	299.5	501.0	157.5	13.0	170.5
1953-54	208.0	300.0	508.0	157.5	13.0	170.5
1954-55	210.3	315.5	525.8	157.5	13.0	170.5
1955-56	218.3	330.5	548.8	163.5	13.0	176.5
		Seminole			Putnam	
1951-52	101.0	...	101.0	16.5	48.0	64.5
1952-53	101.0	...	101.0	16.5	46.0	62.5
1953-54	101.0	...	101.0	20.5	51.0	71.5
1954-55	101.0	15.0	116.0	16.5	52.0	68.5
1955-56	101.0	15.0	116.0	16.5	54.0	70.5

[a]Growers interviewed only; not an estimate for all growers.

Although the volume of ferns shipped in 1956 was slightly higher than that in the previous year, the volume of plumosus ferns shipped from Pierson has taken a downward turn in recent years. The evidence now available is not sufficient to indicate whether this is a turning point toward an upward trend or just a temporary upward movement of a downward trend. Table 10 and Figure 2 show the downward trend in the volume of ferns shipped from 1949 to 1956.

TABLE 10

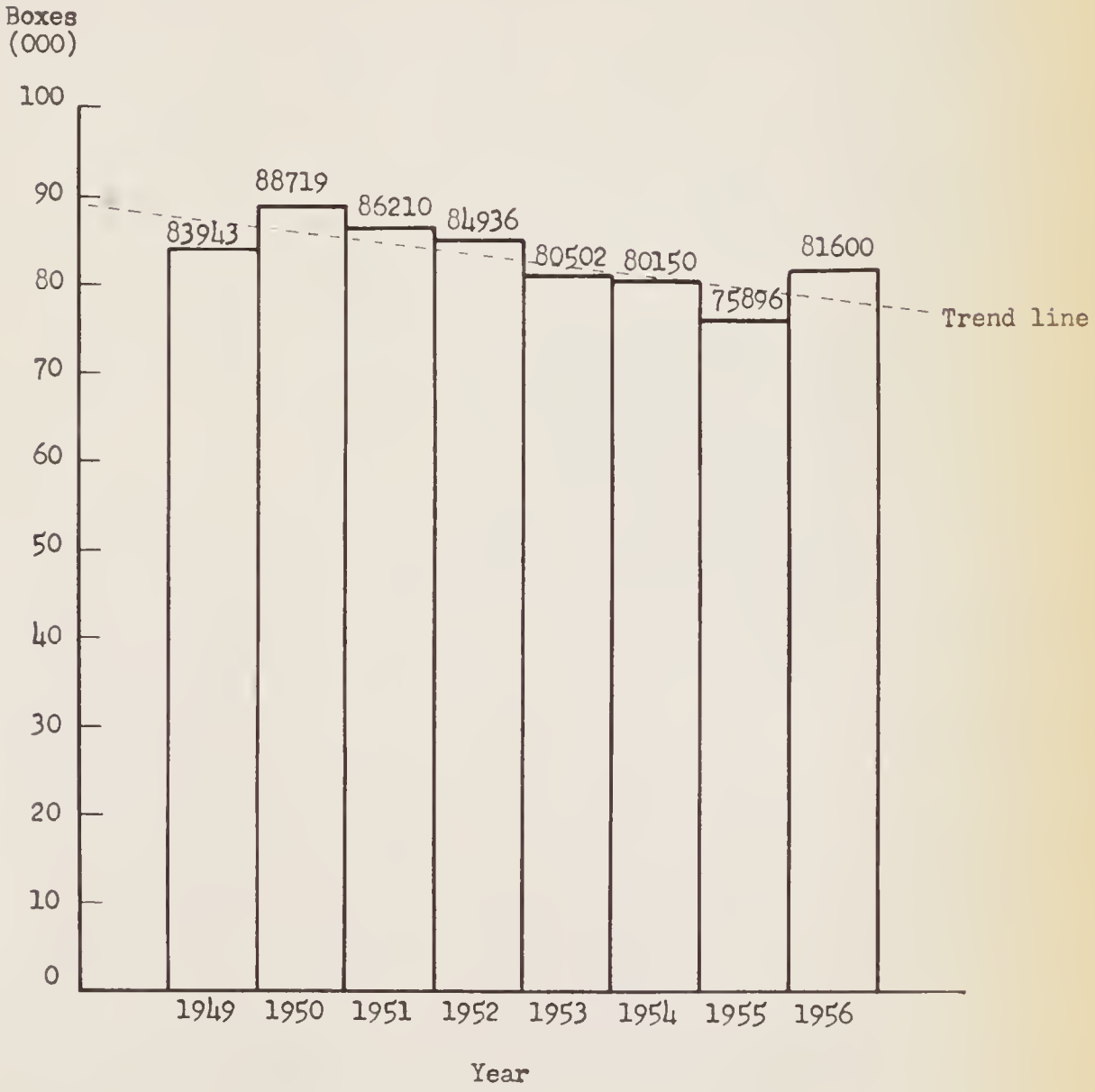
VOLUME OF FERNS SHIPPED FROM PIERSON RAILWAY EXPRESS AGENCY, VOLUSIA COUNTY, 1949-56[a]

Year	Volume Shipped
	Boxes
1949	83,943
1950	88,719
1951	86,210
1952	84,936
1953	80,502
1954	80,150
1955	75,896
1956	81,600

[a]Data obtained from the Pierson Railway Express Agency, Volusia County.

The downward trend in plumosus ferns shipped to market in recent years appears to be in contradiction with the slightly expanding acreage indicated in the previous section. This contradiction may be partially explained by changes in demand and prices received for ferns. The changes in demand forced the price level for plumosus

Figure 2.--Annual volume of plumosus fern shipped from the Pierson Railway Express Station, 1949-56.



Source: Data in Table 10.

ferns downward in recent years. This downward trend in prices, along with the higher costs of constructing and maintaining lath houses, accentuated the tendency for plumosus fern growers to shift production from lath houses to natural shade. Production per acre is lower in the latter method of production. (This situation is explained further in Chapter IV.) It has also been reported that some growers from the Pierson area have, in recent years, shipped all or a part of their ferns from Seville and other railway express stations. This practice would tend to make the Pierson figures less accurate. Data comparable to those from Pierson were not available from other railway express stations.

Estimated Production in 1955-56

The quantity of plumosus ferns produced in a given time is interpreted herein as the volume shipped to market. Plumosus sprays may be cut the year around. However, only the sprays which are sold are counted as production.

Ratio estimates were used to derive the volume of fern production in the industry. The 50 growers in the sample were grouped into three strata--small, medium-sized and large--according to their fernery size. A stratum-by-stratum ratio estimate was used to obtain the average production per acre in each stratum. The average production per acre times the known total acreage equals the total production in a stratum. Adding up the estimates for the three strata gives the industry's volume. Estimates made from the data for the growers interviewed in the four major counties were combined with estimates for the remaining counties in arriving at the over-all production figure. The estimated production of the industry was approximately 383,000,000 sprays in the 1955-56 season (Table 11).

TABLE 11

ESTIMATED PRODUCTION OF PLUMOSUS FERNS IN FLORIDA, 1955-56[a]

Size Group	Average Production Per Acre	Acreage	Total Production
	Sprays	Number Acres	Sprays
Small	188,844	985.0	186,010,907
Medium	213,946	368.5	78,839,101
Large	163,914	719.0	117,854,166
Total	184,658	2,072.5	382,704,174

[a]Period from July, 1955, through June, 1956.

In this estimate it is important to consider the variance of average volume per acre in each size group of growers. The larger variance in a stratum requires a greater number of sample units in that stratum in order to attain a certain degree of specification of the estimate. There is no problem on variance in the case of the large and medium-sized growers because these two groups include enough growers in the sample (17 out of 24 large growers with 80 percent of the acreage and 15 out of 31 medium-sized growers with 52 percent of the acreage). Only 19 of the small growers interviewed supplied usable data; thus only 6 percent of the small growers' acreage was covered in the study. This may not be sufficient to guarantee an accurate estimate of the small growers' production. The sample taken was highly concentrated with the larger growers due to the consideration of cost in field surveying and the availability of data from growers. The cost of interviewing a large grower is little different from that of interviewing a small grower; however, larger growers generally

keep better records than small growers. Of 42 small growers interviewed, only 19 provided data usable in this study.

The total production of the industry can be computed in another way; i.e., by grouping the sample growers by counties and sub-grouping them into small, medium-sized and large strata according to their size. In Table 12 a stratum-by-stratum average production per acre in each county was multiplied by the known number of acres and was equal to the total production of a specific county. In case there were no sample growers in a specific county, the average production per acre of any stratum (small, medium-sized or large) was used, depending upon the size of the growers in that county. The volume of production in each county is shown in Table 12.

TABLE 12

ESTIMATED PRODUCTION OF PLUMOSUS FERNS
BY COUNTIES, 1955-56 SEASON[a]

County	Acreage	Average Production Per Acre	Total Production
	Acres	Sprays	Sprays
Volusia	1,350.0	180,000	243,002,168
Lake	313.2	214,264	67,118,329
Putnam	129.0	160,585	20,715,409
Seminole	114.0	234,569	26,740,866
Marion	84.3	109,049	9,187,373
Palm Beach	22.8	188,787	4,294,904
Brevard	28.0	222,926	6,241,936
Duval	25.0	168,887	4,222,175
St. Lucie	4.2	188,787	802,345
Hillsborough	2.0	188,787	377,574
Total	2,072.5	184,658	382,703,079

[a]Period from July 1, 1955, through June 30, 1956.

The estimated production by counties shown in Table 12 is strikingly close to the estimate based on grower size groups (noted in Table 11). The higher production per acre in Lake, Seminole and Brevard Counties indicates that the acreage in slat houses outnumbered the hammock type acreage. This agrees with data in Table 9 which pertains to the slat house and hammock type acreage.

Plumosus fern production in Volusia County alone was 63 percent of the industry total. The four main counties--Volusia, Lake, Putnam and Seminole--produced 93 percent of the total volume of the industry.

CHAPTER IV

DEMAND FOR PLUMOSUS FERNS

Introduction

Market price is always an indicator of the interaction of demand and supply conditions in a free market system. In analyzing the market structure of the Florida plumosus fern industry, its price trends in the past must be examined in order to evaluate its current position.

Demand, supply and prices interact to create a particular market situation at any given time. Changes in demand will induce changes in prices and supplies and vice versa. The market structure for plumosus fern tends to place sellers at a disadvantage relative to buyers. The possibility of substituting various items of greenery and foliage for plumosus weakens the position of the latter in the market.

Plumosus Fern Price Trends

No series of statistics on prices of plumosus ferns has been developed by the U. S. Department of Agriculture or other public agencies. It has been necessary to rely on individual fern growers' personal records for data to evaluate the general trend of prices for plumosus ferns in Florida (Table 13).

The sales unit generally utilized in marketing plumosus ferns is 1,000 sprays (20 bunches). There is some variation in prices between (1) f.o.b. wholesale, (2) f.o.b. retail and (3) consignment outlets. The f.o.b. prices for sales made by a

TABLE 13

AVERAGE PRICES RECEIVED FOR PLUMOSUS FERNS FROM 1940 THROUGH 1956[a]

Year	Average Prices Received Per 1,000 Sprays[b]	Index of Fern Prices (1940-44=100)	Marginal Change of Price Index
	Dollars	Percent	
1940	5.07	86	
1941	5.25	89	+ 3
1942	5.75	98	+ 9
1943	6.31	107	+ 9
1944	7.00	119	+12
1945	8.50	144	+25
1946	8.87	151	+ 7
1947	9.50	162	+11
1948	9.50	162	0
1949	9.50	162	0
1950	9.62	164	+ 2
1951	10.25	174	+10
1952	10.50	179	+ 5
1953	10.37	176	- 3
1954	9.65	164	-12
1955	9.65	164	0
1956	9.00	153	-11

[a]Prices received by the fern growers are not the market prices paid by florists. It indicates rather the return to growers after paying transportation and other marketing charges.

[b]Data obtained from a large fern grower in Volusia County.

large grower were utilized to compare the trend of price movements for plumosus ferns over a period of 17 years. (Consignment price data were not available for the entire period covered by this analysis.)

The average price received per 1,000 sprays of ferns was $5.07 in 1940, during the World War II period (1941-45) the price per 1,000 sprays rose from $5.25 to $8.50. The price level continued to rise during the postwar period until it reached $9.50 in 1947. From 1947 to 1949, an average price for plumosus was maintained at a constant level of $9.50 per 1,000 sprays. After 1950 and during the Korean War period, the price trend resumed its upward movement. The price dropped from a peak of $10.50 in 1952 to $9.00 in 1956.

Generally speaking, the prices received for plumosus rose to high levels during the World War II and Korean War periods and dropped afterwards.

Fern Prices and All Farm Prices Compared

According to the analysis of price data obtained for this study, the prices received by plumosus fern growers have been rising since 1940. Market conditions for plumosus fern during the war years were, in general, quite favorable. This was especially true during the latter half of the World War II period. The difference between prices received and prices paid[1] for ferns appears to have provided a substantial profit margin for fern growers. The rapid rise of plumosus fern prices during the latter half of the war years and the early postwar years can be attributed in part

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[1] By all farmers. Since accurate data are not available on the cost items for fern growers, it is assumed here that these items had the same general price movement as the items covered in the prices paid index.

to the rationing of durable goods, increased purchasing power and higher personal incomes. Most consumers diverted some purchasing power to non-durable goods and created a price rise which benefited many products, including horticultural specialties.

The level of prices paid by farmers followed the rise of prices received by farmers throughout the war years and early postwar period. The level of prices received by fern growers was below the level of prices received by all farmers during most of the period from 1940 to 1956. While the index of prices received exceeded that of prices paid for agriculture as a whole in the war years and early post war period, fern growers had a much shorter favorable profit period than that for agriculture as a whole.[2] These situations are clearly indicated by the several index series in Table 14 and Figure 3.

The index series in Table 14 starts from 1940 due to lack of price data prior to 1940 from plumosus fern growers. The base period is 1940 to 1944 so that prices received by fern growers could be compared with prices received and prices paid by all farmers on the same basis.

In prewar years, the index of prices received by fern growers was slightly higher than the index of prices paid and of prices received by all farmers. This favorable condition changed between 1941 and 1942. During this period, prices of major farm products increased rapidly and overtook fern prices. The cost of production increased less rapidly than average prices received by farmers, but the rate of rising costs was a little faster than the rising fern prices. The level of fern prices

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[2]This is with the implicit assumption that these indexes accurately reflected the costs and receipts situation for all farmers.

TABLE 14

INDEX OF PRICES RECEIVED BY FERN GROWERS COMPARED WITH INDEX OF PRICES RECEIVED AND PRICES PAID BY FARMERS FROM 1940 TO 1956

Year	Index of Prices Received by Fern Growers[a] (1940-44=100)[c]	Index of Prices Received by Farmers[b] (1940-44=100)	Index of Prices Paid by Farmers[b] (1940-44=100)
1940	86	65	61
1941	89	80	87
1942	98	103	100
1943	107	125	112
1944	119	127	120
1945	144	134	125
1946	151	153	136
1947	162	179	157
1948	162	186	171
1949	162	162	165
1950	164	167	168
1951	174	195	185
1952	179	186	188
1953	176	167	183
1954	164	161	184
1955	164	153	184
1956	153	152	188

[a]Data obtained from a large fern grower in Volusia County.

[b]Data recomputed from Major Statistical Series of the U.S. Department of Agriculture: (Agricultural Prices and Parity), U.S. Department of Agriculture, Agricultural Handbook No. 118, Vol. I (Washington: U.S. Government Printing Office, 1957), p.63.

[c]Simple averages of annual prices.

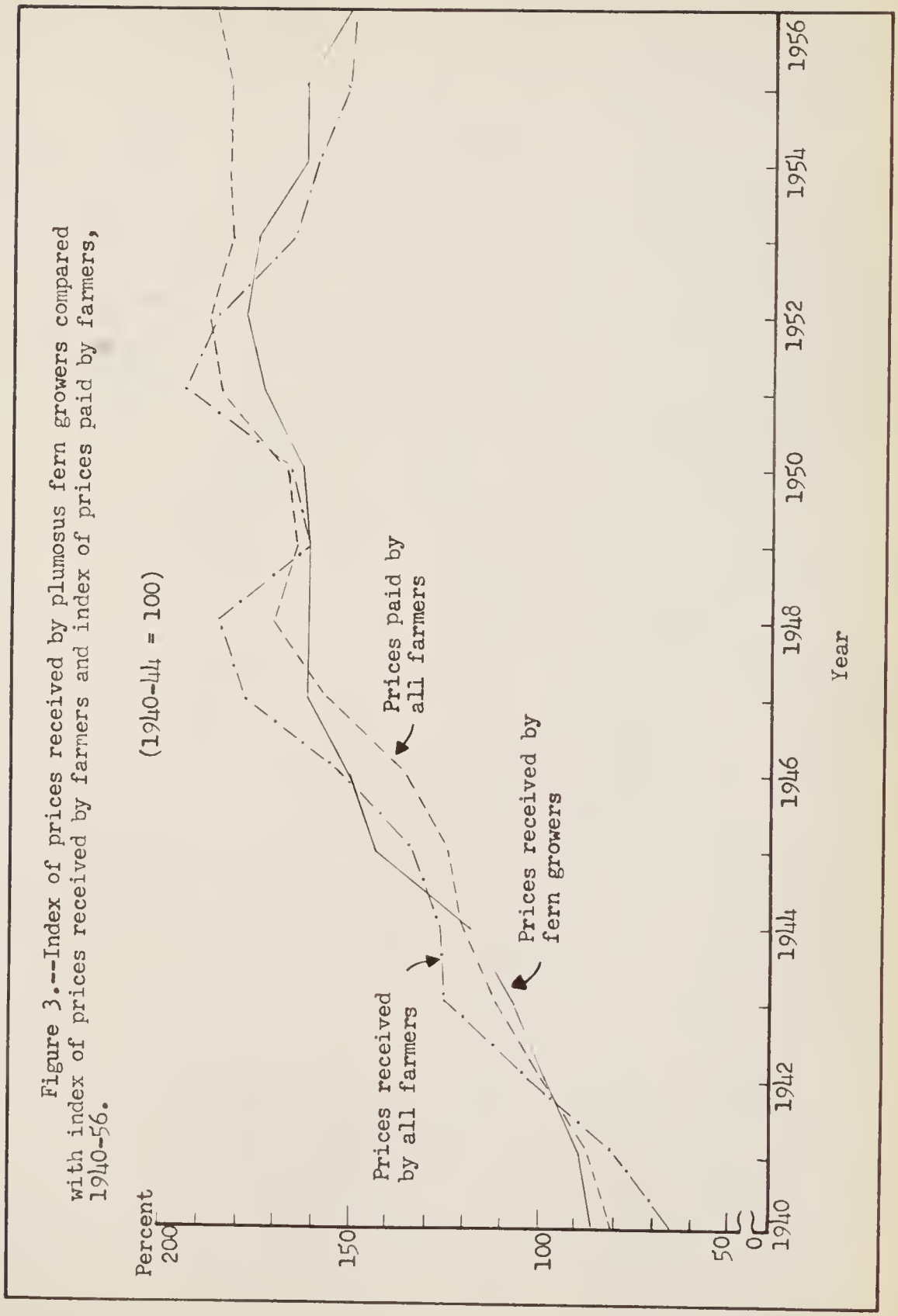


Figure 3.--Index of prices received by plumosus fern growers compared with index of prices received by farmers and index of prices paid by farmers, 1940-56.

increased again in comparison with the cost level in 1944 and even exceeded the level of prices received by all farmers in 1945. This favorable condition continued until 1947 when most farm prices and costs rose at a rapid pace while fern prices remained stable.

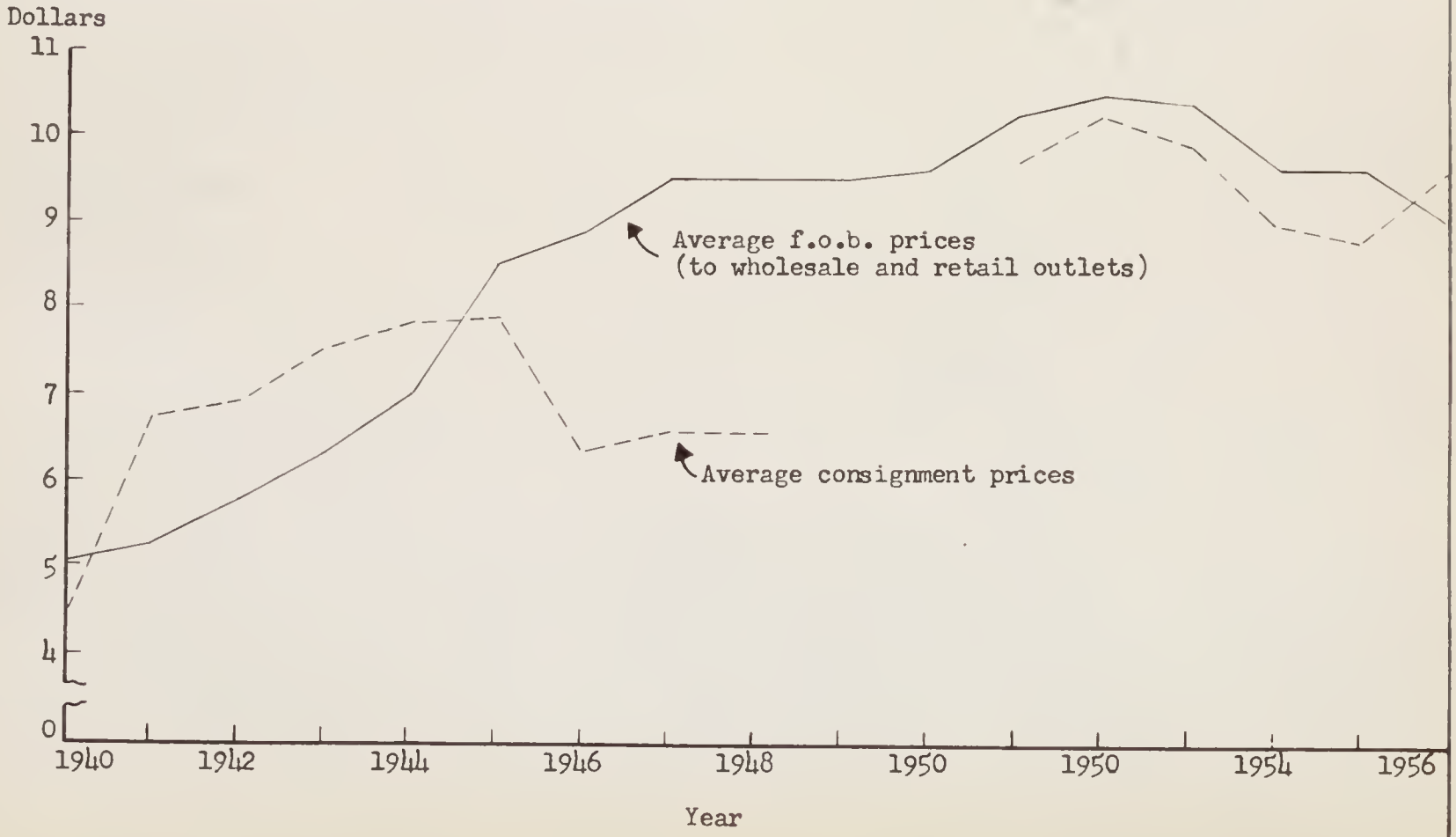
Since 1947, plumosus fern growers have found less profitable market conditions for their products. Prices for plumosus ferns have stayed fairly stable with a little upward trend from 1950 to 1952. On the other hand, overhead and operational costs have increased and overtaken the price level. This unfavorable condition continued and even became worse after 1953. The price level of plumosus ferns declined while the costs of marketing and production continued a moderate upward trend. Fern growers, like other farmers, were caught in a price-cost squeeze.

F. O. B. and Consignment Price Trends

The price trend of plumosus ferns shipped on an f.o.b. basis was quite different from those shipped on a consignment basis (Figure 4). The f.o.b. prices rose steadily during World War II but remained at lower levels than consignment prices from 1941 through 1944. On the other hand, consignment prices were high during the war time and dropped sharply after the war. The f.o.b. price trend was consequently exceeded by the consignment price trend during the World War II period, but was considerably above the consignment price level in the postwar period.

During the 1949-50 period, the f.o.b. price level was relatively stable. However, consignment price data were not available for these years. The f.o.b. price level was slightly above the consignment price level during the Korean War. Both price levels declined after the Korean War. From 1955 to 1956, the f.o.b.

Figure 4.--Average prices received for per-1,000-spray of plumosus ferns by a large grower in Volusia County, 1940-56.



price level declined while the consignment price level had an upward trend.

Effects of Price Changes on the Fern Industry

Unfavorable market conditions have had several effects on the industry. The keen competition among growers for market outlets has created numerous "price wars" during the peak marketing season and have probably caused many small growers to go out of business or to sell their ferneries to larger growers. The production of plumosus ferns is an intensive enterprise but it may tend to be less intensive in terms of resources used if costs of production continue to rise and prices of ferns continue downward. Fertilizing, spraying, dusting and grading may be reduced, either in frequency or in volume. Also, the hammock type of fernery has gradually increased and there has been a tendency to replace slat houses with natural shade. The initial capital outlay for a hammock type fernery is lower than for the lath house type. As noted earlier, yields are lower in hammock ferneries. For these reasons, although the acreage in production increased slightly from 1951 to 1956, there has been a decline in the plumosus fern supply[3] on the market during the past eight years.

The unfavorable price level and the downward trend in volume shipped of plumosus ferns are strongly indicative of a change in the market demand for plumosus ferns. This change in demand for plumosus ferns is not a result of any decline in consumer spending for flowers and ornamental horticultural products. Instead, consumer spending for florists' products more than tripled in current dollar value from 1940 to 1953

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[3] The decline of supply is indicated by Table 10 and Figure 2 in Chapter III.

and almost doubled from 1947 to 1953.[4] It appears that the causes of decreasing market demand and a declining price level can be attributed to two factors: (1) the competition from other greenery and (2) a situation in which unorganized plumosus fern growers are attempting to deal with better organized florists' markets.

Competition From Other Greenery

The major reason for the downward trend of Florida plumosus ferns is believed to be keen competition from other greenery. The major competing items are sword ferns, huckleberry and salal from the Pacific Coast; jade and emerald from Mexico, lycopodium and polypodium ferns from Hawaii; English laurel, oak leaves and smilax from the Southeast; and leather leaf fern, springerii fern, podocarpus and pittosporum from Florida. All these items of greenery are competitive with plumosus fern for a share of the market in one way or another. Many other foliages or greens could be listed. However, some may not be competitive and others are not competitive to a large degree. Only the more important competitive greens and their principal supply sources are discussed below.

Pacific Coast greens.-- Greens from the Pacific Coast are probably more competitive with Florida ferns than those from any other area. Huckleberry, salal and sword ferns are natural greens produced largely in the mountain areas of Oregon, Washington and California. These ferns are generally picked by individuals and sold to a distributor who grades, packs and ships the greens throughout the nation.

Pacific Coast greens are deemed to have several advantages over plumosus

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[4]Trotter, op. cit., p. 25.

ferns. They are larger, covering more area for each dollar in the cost of the product; hardier, not easily shattered; and greener, more adaptable to decorative purposes. Although it took over ten years of promotional effort before they were generally accepted, these greens are now considered standard articles of the floral trade. The size of the native greens business in the Pacific Northwest is illustrated by the example of one packing station (Callison's in Chehalis, Washington). There, 30 carloads of greens can be stored for precooling before shipment to eastern markets. One carload holds 300 fern cases; a case contains 50 bunches of 50 ferns.[5] The trend of sales for these three Pacific Coast ferns is increasing.[6] Despite the decline in their use, plumosus ferns have some advantages over Pacific Coast ferns. Although supply is lowest during the winter season, plumosus ferns are shipped the year-round. Greens from the Pacific Northwest are usually not shipped during the winter. Cold weather hampers harvesting work in the snow covered mountainous area. Plumosus ferns are produced in an area which is nearer eastern markets than those from the Pacific Coast, Hawaii and Mexico; thereby they enjoy cost advantages in transportation, storage, reshipment and handling. Plumosus ferns are excellent for making corsages, bouquets and wreaths although not as economical in covering space as some other types of greenery. Based upon these advantages, plumosus ferns are still important items of greenery in the florists' market.

Mexican foliage.--Two palm foliages imported from Mexico under the trade names, "jade" and "emerald" fern or "King Commodore" and "Queen Commodore"

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[5]Charles H. Fetner, "A Green Harvest," The Florists' Review, Vol. 119, No. 3077, November 22, 1956, p. 70.

[6]Edward L. Reda, Mainland Markets for Hawaiian Flowers and Foliage, University of Hawaii Agricultural Economics Report 9 (Honolulu: 1952), p. 92.

fern, are becoming increasingly popular for decorative purposes. These foliages are very competitive with Florida plumosus ferns as well as with Pacific Coast huckleberry and salal for decorative work in many markets.

Hawaiian ferns.-- Two Hawaiian ferns, lycopodium and polypodium, are keen competitors with mainland ferns. The lycopodium has a wide market because it is known throughout the United States. The polypodium fern is favorably received in the florists' market because of its unusual form and longevity.

Southeastern greens.-- There are several greens from the Southeastern region which appear to be competitive with plumosus ferns. English laurel from North Carolina is popular in the East because of its longevity. Smilax, a small leaf, green or bronze in color with a long stem, is obtained from the mountains of Tennessee and North Carolina. These greens are used quite extensively in wreaths and funeral pieces and for other decorative purposes. While not in the Southeast, Indiana offers an abundance of oak leaves for the florists' trade.

Florida local greens.-- Besides plumosus ferns, Florida produces several other greens which are extensively used in the florists' market for decorative purposes. Leather leaf and springerii ferns, podocarpus and pittosporum are shipped out of state although, as compared with plumosus ferns, they are less important in volume and total returns. In fact, many plumosus fern growers also produce leather leaf or other greens in order to have some diversity in their businesses.

Leather leaf fern appears to have a very promising market potential because of its long lasting characteristic. It is estimated that around 7,350,000 sprays of leather leaf fern were produced on some 42 acres of land in Florida in the 1955-56

season. This is about 2 percent of the plumosus fern industry's acreage and production volume in Florida.

Springerii fern is a delicate green. Like plumosus, it is also a member of the lily family. Its market is limited due to its high perishability. The acreage of springerii fern in Florida is estimated at about 20 acres. Two million sprays were marketed in 1955-56.

Receipts From Plumosus Marketings

Receipts from the marketing of Florida plumosus ferns in 1955-56 season were estimated by ratio methods. The process of making ratio estimates of marketing receipts was quite similar to that used in making estimates of plumosus fern production volume. An average return per 1,000 sprays by size groups of growers and by different counties was computed. After this was done, the total returns to growers in different size groups and in various counties was obtained by multiplying the average returns by the quantity of ferns sold in the different groups and counties. The average sales per grower were also computed by dividing the total returns in each group or county by the total number of growers in that group or county.

The average returns per 1,000 sprays of ferns marketed may be viewed as a guide in evaluating the effectiveness of the marketing practices utilized by the various size groups of growers. The large growers received the highest return, $9.54 per 1,000 sprays; the medium-sized growers were second with $9.36 per 1,000 sprays; and the small growers were lowest with $8.89 per 1,000 sprays (Table 15). The average returns to growers depend a great deal upon the type of market outlets to which ferns are sold, the physical condition in which the products are shipped, the

TABLE 15

ESTIMATED RECEIPTS FROM SALES OF PLUMOSUS FERNS BY GROWERS IN FLORIDA, 1955-56[a]

Size Group	Sprays	Average Return Per 1,000 Sprays	Total Returns	Growers	Average Sales Per Grower
	Number	Dollars	Dollars	Number	Dollars
Small	186,010,907	8.89	1,653,637	345	4,793
Medium	78,839,101	9.36	737,934	31	23,804
Large	117,854,166	9.54	1,124,329	24	46,847
Total	382,704,174	9.18	3,515,900	400	8,789

[a]Period from July 1, 1955, through June 30, 1956.

time at which they are sold and other factors. A further exploration of these factors will be made in a later section.

Total returns to small growers were $1,653,637 or approximately 47 percent of the industry total, but the average sales per small grower were only $4,793 annually. The value of sales for medium-sized growers was about 21 percent of the industry's total receipts; the average annual sales per grower were $23,804. Large growers received 32 percent of the industry's total receipts with average annual sales of $46,847 per grower. The estimated sales receipts to the industry were approximately $3,500,000.

Data on estimated sales receipts of plumosus fern growers were also developed on a county basis. The average return per 1,000 sprays in each county was derived from the total sales value and volume sold in each county. Returns from sales estimated

on a county basis exceeded the size-group estimate by less than $10,000 (Table 16).

The higher average return per 1,000 sprays in Lake and Seminole Counties indicates that those counties had a higher proportion of large or medium-sized growers than Volusia and Putnam Counties. The average returns per 1,000 sprays in Palm Beach, Brevard, Duval, St. Lucie and Hillsborough Counties were generally higher than those in the four major plumosus fern producing counties. The higher return in these minor plumosus fern producing counties may be due to the practice of many growers to sell their ferns to local florists or perhaps to more orderly marketing.

TABLE 16

ESTIMATED RECEIPTS FROM SALES OF PLUMOSUS FERNS BY COUNTIES, 1955-56[a]

County	Sprays	Average Return Per 1,000 Sprays	Total Returns	Growers	Average Sales Per Grower
	Number	Dollars	Dollars	Number	Dollars
Volusia	243,002,168	9.00	2,187,020	309	7,078
Lake	67,118,329	9.35	627,556	42	14,942
Putnam	20,715,409	8.34	172,767	21	8,227
Seminole	26,740,866	11.63	311,053	4	77,763
Marion	9,187,373	8.50	78,093	5	15,618
Palm Beach	4,294,904	9.08	38,998	10	3,900
Brevard	6,241,936	9.19	57,363	3	19,121
Duval	4,222,175	9.63	40,660	1	40,660
St. Lucie	802,345	9.11	7,313	3	2,428
Hillsborough	377,574	12.39	4,678	2	2,339
Total	382,703,079	9.21	3,525,501	400	8,814

[a]Period from July 1, 1955, through June 30, 1956.

The average sales per grower in each county noted in Table 16 may be looked upon as being related to the average size of growers. The higher average sales per grower indicate a large percentage of large or medium-sized growers in that county. Seminole and Duval Counties have the highest sales per grower; the only growers in these two counties were classified in the large size group. The average value of sales per grower in Hillsborough, St. Lucie and Palm Beach Counties was among the lowest group. These three counties have only small growers. The remaining counties have a combination of different size groups; the average sales per grower lie between the highest and lowest figures noted in the last column of Table 16.

CHAPTER V

MARKET OUTLETS

Types of Market Outlets

The plumosus fern grower in Florida markets his product principally in three general ways: (1) consignment to wholesalers, (2) direct to wholesalers and (3) direct to retailers. Besides these major market outlets, there can be added an additional outlet--sale to local growers. Although the latter is insignificant in volume sold when compared with the other three outlets, it is important for some small growers.

The choice of market outlets by plumosus fern growers in Florida depends upon many factors. Several dominant ones may be listed as: (1) personal contact with prospective retail and wholesale buyers, (2) size of shipment, (3) ability to supply markets throughout the year, (4) desire for cash settlements and (5) dissatisfaction with the consignment method of selling.

It is believed that the extent of personal contact with the florists' trade influences very greatly the choice of market outlets. Many growers make several trips each year to important market areas in the nation to contact florists and make arrangements for selling ferns to them. Through personal contact, fern growers are able to learn the demand and supply situation in different areas and can thereby sell to markets offering maximum returns. It appears that large growers usually travel more and contact more florists than small growers. The fact that the average return

per 1,000 sprays of ferns for large growers was higher than for medium-sized and small growers, as indicated previously, may be largely due to this reason. The choice of market outlets by large growers differed considerably from that by small growers. Large growers shipped more ferns directly to retail florists than to consignment florists (Table 17).

TABLE 17

AVERAGE NUMBER OF BUYERS TO WHICH 50 PLUMOSUS FERN GROWERS INTERVIEWED IN VOLUSIA, LAKE, SEMINOLE AND PUTNAM COUNTIES SOLD FERNS, 1955-56[a]

Size Group	Consignment to Wholesale Florists	F.O.B. Wholesale Florists	F.O.B. Retail Florists	Total Buyers
	Number	Number	Number	Number
Small Grower	2	3	4	9
Medium Grower	4	8	3	15
Large Grower	8	20	78	106

[a]Period from July 1, 1955, through June 30, 1956.

The number of buyers per fern grower in Florida varied with the size of the operator's business. Larger fern growers have larger quantities to sell and, other things being equal, must find more buyers than smaller growers.

Small growers had an average of 9 buyers, the medium-sized growers had 15 and the large growers had 106. It is quite obvious that sales to retail florists constituted a more important outlet for larger growers than for small and medium-sized growers. F.O.B. sales to wholesale florists were a more important outlet for

medium-sized and large growers than for small growers. Fern growers usually ship to more than one buyer and to more than one city in order to reduce the risk of shifts in market demand and to maintain a certain amount of flexibility so that they can adjust their supplies to better marketing situations should the opportunity occur.

Size of shipment is also an important factor in the choice of market outlets. Although sales to retail florists are usually at higher prices than those to wholesale florists, the size of shipments made to each differ considerably. Wholesalers are generally able to handle much larger shipments of plumosus ferns than retailers. Thus, the ability of wholesalers to handle larger shipments may be an important consideration to growers in allocating their supplies to alternative outlets.

The desire for prompt payment for ferns shipped is universal for all fern growers but it is believed to be especially true for small growers. Some small growers sell all their ferns to other local growers and receive prompt payment for most such sales. Fewer marketing services are performed than when shipments are made to terminal destinations. Sales to retail and wholesale florists on an f.o.b. basis are made at mutually satisfactory prices. Although settlements for sales made on an f.o.b. basis may on occasion be slow, most fern growers prefer to make f.o.b. sales since, in doing so, they are assured of a definite price.

Dissatisfaction with the consignment method of selling is quite prevalent among plumosus fern growers. A large number of the growers interviewed indicated that they preferred not to deal with consignment florists. The dissatisfaction arose from risks of not having the ferns sold, unstable prices and the delayed settlement reports often involved in the consignment method of selling. This method is still an

important outlet because of the difficulty of finding f.o.b. market outlets for all ferns and the unfamiliarity with alternative markets by many growers who must rely on the consignment agent to sell their product.

Of all plumosus fern sales made by the industry, nearly a third were sold on consignment to wholesale commission florists (Table 18). More than 40 percent were marketed to wholesale florists on an f.o.b. basis. Retail florists purchased one-fourth of the total on an f.o.b. basis. Nearly 3 percent of all ferns were sold initially to other growers in the local fern producing area.

TABLE 18

PROPORTION OF PLUMOSUS FERNS SOLD BY FLORIDA GROWERS TO VARIOUS SALES OUTLETS, 1955-56[a]

Size Group	Outlets				
	Consignment to Wholesale Florists	Direct to Wholesale Florists	Direct to Retail Florists	Other Growers	Total
	Percent of Total				
Small	35.2	34.8	24.7	5.3	100.0
Medium	36.9	52.1	10.8	0.2	100.0
Large	20.3	44.1	35.2	0.4	100.0
All Growers	31.1	41.1	25.0	2.8	100.0

[a]Period from July 1, 1955, through June 30, 1956.

Consignment sales and those made directly to wholesale florists were of almost equal importance to small growers. Each accounted for more than a third of small growers' fern marketings. The retail market outlet accounted for one-fourth of small

growers' sales. Sales to other growers constituted a higher proportion of small growers' fern sales than those of other size groups. Over one-half of the medium-sized growers' product was sold directly to wholesale florists on an f.o.b. basis. Large growers sold a higher proportion directly to retail florists than did growers in the other size groups.

The quantity of plumosus ferns sold to the different market outlets is noted in Table 19. The data in this Table are in the same proportions as those shown in Table 18 but are presented in quantity terms.

TABLE 19

ESTIMATED QUANTITY OF PLUMOSUS FERNS SOLD BY FLORIDA GROWERS TO VARIOUS SALES OUTLETS, 1955-56[a]

Size Group	Outlets				
	Consignment to Wholesale Florists	Direct to Wholesale Florists	Direct to Retail Florists	Other Growers	Total
	Number of Sprays				
Small	65,457,238	64,731,796	45,981,896	9,839,977	186,010,907
Medium	29,083,744	41,043,636	8,530,391	181,330	78,839,101
Large	23,959,752	51,950,116	41,520,023	424,275	117,854,166
All Growers	118,500,734	157,725,548	96,032,310	10,445,582	382,704,174

[a]Period from July 1, 1955, through June 30, 1956.

Returns to growers were highest for ferns sold directly to retail florists at an average price of $10.27 per 1,000 sprays (Table 20). Consignment prices (after paying shipping and commission charges) for ferns shipped by small and medium-sized growers exceeded the average f.o.b. wholesale prices received by these growers. On the

TABLE 20

AVERAGE PRICES RECEIVED BY FLORIDA GROWERS FOR PLUMOSUS FERNS SOLD THROUGH VARIOUS OUTLETS, 1955-56[a]

Size Group	Outlets				
	Consignment to Wholesale Florists	Direct to Wholesale Florists	Direct to Retail Florists	Other Growers	Total
	Dollars per 1,000 Sprays				
Small	9.18	8.68	9.57	5.22	8.89
Medium	9.51	9.17	9.81	5.00	9.36
Large	8.02	8.96	11.18	7.00	9.54
All Growers	9.04	8.90	10.27	5.29	9.19

[a]Period from July 1, 1955, through June 30, 1956.

other hand, consignment prices for ferns shipped by large growers was below their average f.o.b. wholesale prices. Small and medium-sized growers relied on wholesale consignment outlets to a greater extent than large growers. It may well be that small and medium-sized growers shipped better quality ferns and made shipments more regularly to wholesale consignment outlets than did large growers. Also, there is the possibility that some large growers may have irregularly dumped supplies on the wholesale consignment market. Prices received for ferns sold to other growers were lower than those sold to distant outlets; often packing, hauling, handling and other services were not performed, thus reducing the costs of marketing in connection with such sales.

Receipts to growers from sales to each of the principal market outlets in the

Florida plumosus fern industry were estimated by multiplying the average returns per 1,000 sprays and the estimated quantity sold to each market outlet. The receipts of Florida fern growers from consignment to wholesale florists were estimated at around $1,000,000 or 21 percent of the industry's total receipts (Table 21). Receipts from sales made directly to wholesale florists were estimated at more than $1,400,000 or 40 percent of the industry's total receipts. Receipts from sales made directly to retail florists were estimated at less than $1,000,000 or 27 percent of the total. Sales to other growers were estimated at $56,000 or 1.6 percent. The total receipts of the industry were around $3,500,000.

TABLE 21

ESTIMATED RECEIPTS FROM SALES OF PLUMOSUS FERNS MADE THROUGH VARIOUS MARKET OUTLETS, 1955-56[a]

Market Outlets	Volume Marketed	Average Return Per 1,000 Sprays	Estimated Receipts	
	Sprays	Dollars	Dollars	Percent
Consignment to Wholesale Florists	119,103,914	8.04	1,176,[illegible]	[illegible].64
Direct to Wholesale Florists	157,367,958	8.90	1,400,575	[illegible].64
Direct to Retail Florists	95,361,230	10.27	981,414	2[illegible].32
Other Growers	16,[illegible],172	5.27	86,[illegible]	1.60
Total	388,[illegible],174	9.1[illegible]	3,[illegible],[illegible]	100.00

[a]Period from July 1, 1955, through June 30, 1956.

In order to understand better the nature of the different market outlets to which Florida fern growers sell their products, they will be discussed separately in terms of their importance, services performed and settlement practices in the next few sections.

Consignment to Wholesalers

Nearly a third of Florida's plumosus ferns were sold on consignment to wholesale commission florists in 1955-56. The returns to fern growers for sales made through this type of market outlets were estimated at nearly one-third of the industry's receipts.

Wholesale consignment florists are located in large cities throughout the nation. Their major function is to sell flowers and other florists' products for growers. Some of these firms specialize in handling greenery and supplies other than flowers. When selling on consignment, such firms do not take title to products handled. A commission, based on a percentage of the sales value, is charged by the wholesale consignment florist. After selling the product, he deducts his commission, any transportation charges paid by him and, in some areas, a small advertising or promotion charge[1] from the sale price. The remainder is then remitted to the grower.

Settlements with growers are usually made weekly or at some longer interval. The frequency of settlements varies considerably with different agents. Table 22 shows the proportion of wholesale consignment florists who made their reports in various settlement periods in 1955-56. Of the total, 35 percent were made weekly, 21 percent

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[1] Such payments are usually made to an "allied" florists' group which uses them for conducting advertising and promotion campaigns. The "allied" assessment seldom exceeds 2 percent.

TABLE 22

PROPORTION OF WHOLESALE CONSIGNMENT FLORISTS MAKING SETTLEMENT REPORTS TO GROWERS AT VARIOUS INTERVALS, 1955-56[a]

Grower Size Group	Reporting Period				
	Weekly	Semi-monthly	Monthly	Irregularly	Total
	Percentage of Volume Sold				
Small	25.5	25.5	36.2	12.8	100.0
Medium	64.5	10.8	21.5	3.2	100.0
Large	50.9	11.8	36.7	0.6	100.0
Weighted Average	35.0	21.1	34.6	9.3	100.0

[a]Period from July 1, 1955 through June 30, 1956.

semi-monthly, 35 percent monthly and 9 percent irregularly. Among the size groups, medium-sized growers had 65 percent of their settlements made on a weekly basis. Large growers had 51 percent of their settlements made on a weekly basis and 37 percent on a monthly basis. Small growers had only 25 percent of their settlements made on a weekly basis, 36 percent on a monthly basis, and 13 percent were made on an irregular basis. Generally speaking, medium-sized and large growers received settlement reports more regularly than did the small growers.

Commission charges vary from 15 to 25 percent, depending upon services rendered, the individual market and whether or not the grower is a new, old or consistent supplier. According to the investigation of sales made to consignment wholesale florists in 1955-56, 55 percent of the volume was sold for a 25 percent commission, 44 percent sold for a 20 percent commission and only 1 percent sold for a 15 percent commission.

A consensus of growers' opinion indicated that sales on consignment to wholesale florists were comparatively unstable in volume shipped and in returns. In addition to these instabilities, growers had to bear the risks involved in the marketing process such as damage in transportation or storage and dumping during a season of excess supplies. The percentage of plumosus fern sold, dumped and carried over in various seasons by wholesale consignment florists is shown in Table 23.

TABLE 23

PROPORTION OF FERNS SHIPPED TO WHOLESALE CONSIGNMENT FLORISTS WHICH WERE SOLD, DUMPED, AND CARRIED OVER, BY SEASONS, 1955-56[a]

Season	Shipped	Sold	Dumped	Average Carry Over
		Percentage		
Winter, 1955[b]	100	89	1	10
Spring, 1955	100	89	7	4
Summer, 1955	100	88	9	3
Fall, 1955	100	90	4	6
Winter, 1955-56	100	93	2	5
Spring, 1956	100	87	7	6
Summer, 1956	100	80	12	8

[a]Data obtained from sales invoices of seven plumosus fern growers.

[b]Data actually refer to January and February of 1955.

In this analysis each season was considered as a unit for computing the percentages sold, dumped and carried over. It may be noted that a lower dumping rate was prevalent in winter than in the other seasons. On the other hand, the summer

season usually had a relatively high dumping rate. The percentage of ferns not sold but carried over, with sales reported on the next settlement report, was quite irregular. Although the amounts carried over from one specific accounting period to another were sometimes one-half or two-thirds of those made by individual shippers, the average proportion in the situation analyzed here (by seasons) ranged from 3 to 10 percent. Even in winter, when the over-all proportion of sales was highest, the percentage of ferns carried over is likely to be high if a grower sends excessive quantities to his consignment agent. Some growers claimed that marketing by consignment to wholesale commission florists is a dumping ground for all ferns for which there are no other market outlets. This lowers the market prices for ferns and thereby adversely affects the return to all growers in the industry. This "wildcatting" practice, i.e., a grower shipping his product without an order or understanding with the wholesale commission florist to receive them, may characterize some operators but it is not true for all growers.

In order to avoid the risks involved in wholesale consignment selling, fern growers ship to a number of wholesalers in different markets. This tends to reduce the risk of a price decline in a given market and to spread the risk in times of a declining demand. Fern producers may also ship to more than one commission agent in the same market. Thus they are able to compare returns from different commission agents. This practice, however, may create misunderstanding between growers and florists. Some fern growers also indicated that consistent supplies shipped to the same commission agents tend to establish mutually satisfactory business relationships. Wholesale florists tend to give preferential treatment to their consistent suppliers. The choice

between flexible supply or consistent supply to wholesalers depends largely upon the fern growers' market relationships and his behavior in marketing operations.

Direct Sales to Wholesalers

About 41 percent of Florida plumosus fern was marketed by selling directly to wholesale florists in the 1955-56 period. The returns to fern growers for this type of selling were estimated at nearly 40 percent of the industry's receipts.

A wholesale florist buying on an f.o.b. basis and a wholesale commission florist may, in actuality, be the same firm. It may receive ferns on consignment as well as make outright purchases from growers. The major function of the wholesaler in the distribution system for florists' products is to provide a central location where growers' products can be displayed and where the retail florist can find a wide selection of needed stocks.

When the wholesale florist purchases ferns from growers on an f.o.b. basis, he has to bear transportation charges, advertising costs and the risks involved in transit and storage.

The average prices received per 1,000 sprays through sales made directly to wholesale florists were slightly less than the average prices received from consignment sales to wholesale florists in the 1955-56 period. However, the price for ferns--and the demand for them--in sales made directly to wholesale florists were steadier than those made on consignment to wholesale florists. Settlements with growers are made on a weekly, semi-monthly or monthly basis, depending upon the individual merchant.

Direct Sales to Retailers

Plumosus fern sales made directly to retailers were estimated at about 25 percent of the volume sold and 28 percent of the industry's total receipts in Florida in 1955-56. Average prices received by fern growers for sales made directly to retailers were higher than those to any other type of market outlet.

Retail florists are located in large cities and in small cities all over the nation. They buy stocks from wholesale florists or directly from growers. Since plumosus ferns are used in combination with flowers in the making of wreaths, corsages and bouquets, retail florists are the final stage in the marketing channel.[2]

Fern sales made directly to retailers are usually in small quantities but the demand for them tends to remain rather stable. It is common for many fern growers to ship one or two cases (1,000 sprays of ferns per case) per week to retail florists regularly throughout a year. The price received is relatively constant and not subject to seasonal fluctuations. Retail florists inform growers by letter or by telegraph if there is any change in their demand for ferns. The receiver pays transportation charges upon arrival of the fern cases and normally makes settlement with fern growers within two weeks.

Other Outlets

Fern growers sold ferns to other growers to the extent of nearly 3 percent of the total volume of ferns marketed and accounted for approximately 1.6 percent of

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[2] Although the purchaser of wreaths, corsages, bouquets, etc. is the final consumer of plumosus ferns, he does not buy the ferns as such, but as part of floral arrangements.

the industry's receipts. Sales to other growers are of two types. One is consistent selling to other growers with no shipments made to florists in distant markets. The other is occasional selling to other growers, but such sales are usually not a major part of the output of such growers.

In the first case, a few small operators in Volusia County do business entirely with local fern growers. Thus they do not perform packing, hauling, handling and other services. The average price per 1,000 sprays is usually around $5.00 to $7.00 if the seller cuts and delivers to the buyer. Payment is usually made shortly after delivery of the ferns. Only a few fern shippers depend entirely on outright purchases from other growers for their total supplies. Most fern growers, if they purchase ferns from other growers, do so only if their own ferneries are producing small outputs.

In the second case, the fern grower, regardless of size, may sell a part of his ferns to other growers when their supplies are short. Such sales may occur after the grower has made the first cut of the fernery. The remaining sprays or second cuts may be sold to other growers. First cuts are usually better in quality than second cuts, but the quantity obtained may be as great as that of the first cut.

Another very small but interesting market outlet is open to a few fern growers during periods of excess supply, normally in the spring and summer. A small number of fern growers are utilizing a "pickling" process which prevents the shattering of plumosus ferns. This process involves the immersion of plumosus fern sprays in a salty or some other chemical solution for a period of several weeks. The fern is thus stiffened. It is painted in various colors and sold to artificial flower manufacturers. The sale of "pickled" fern was estimated at 3,000,000 sprays annually and accounted for nearly 1 percent of the industry's marketing volume.

CHAPTER VI

MARKET DISTRIBUTION

Scope of Distribution

Distribution areas

Florida plumosus ferns are marketed throughout the United States and part of Canada. The major market areas for plumosus ferns, like those for most Florida agricultural products, lie east of the Mississippi River. According to an analysis of fern market distribution data collected from the Pierson Railway Express Agency Station during August, 1956, 45 percent of all ferns shipped went to buyers in the Southeast. Thirty-one percent were shipped to the Northeast and 16 percent to the Midwest. Buyers in the Southwest and the Far West together received 4 percent of the total. Nearly 3 percent of all shipments went to Canada.

The market distribution of ferns by states in terms of volume shipped, percentage shipped, weekly average shipments and daily average shipments is noted in Table 24. Although the period for which the data were collected, August, 1956, was one when shipments were relatively low, available information indicates that this pattern of market distribution can be regarded as representative for all seasons. Pennsylvania, North Carolina, Tennessee, Massachusetts and Alabama each received more than 5 percent of all shipments made from the location studied during August, 1956. Georgia, New York, Florida, Ohio, Kentucky, South Carolina and Illinois were

TABLE 24

MARKET DISTRIBUTION OF FERNS SHIPPED FROM THE PIERSON RAILWAY EXPRESS AGENCY STATION, AUGUST, 1956

Area	Volume Shipped	Proportion of Total	Weekly Average	Daily Average
	Sprays	Percent	Sprays	Sprays
Northeast				
Connecticut	87,750	1.3	19,500	3,250
Delaware	26,000	0.4	5,778	963
Maine	48,500	0.7	10,778	1,796
Maryland	97,950	1.4	21,767	3,628
Massachusetts	469,500	6.8	104,333	17,389
New Jersey	167,050	2.4	37,122	6,187
New York	301,700	4.4	67,044	11,174
Pennsylvania	603,750	8.8	134,167	22,361
Rhode Island	43,000	0.6	9,556	1,593
Vermont	3,000	a	667	111
West Virginia	190,650	2.8	42,367	7,061
Washington, D.C.	108,000	1.6	24,000	4,000
Subtotal	2,146,850	31.3	477,078	79,513
Southeast				
Alabama	364,000	5.3	80,889	13,481
Arkansas	62,400	0.9	13,867	2,311
Florida	309,950	4.5	68,878	11,480
Georgia	325,550	4.7	72,344	12,057
Kentucky	230,400	3.4	51,200	8,533
Louisiana	149,700	2.2	33,267	5,544
Mississippi	229,550	3.3	51,011	8,502
North Carolina	485,800	7.1	107,956	17,993
South Carolina	263,900	3.8	58,644	9,774
Tennessee	490,450	7.2	108,989	18,165
Virginia	204,750	3.0	45,500	7,583
Subtotal	3,116,450	45.4	692,544	115,424
Midwest				
Illinois	217,550	3.2	48,344	8,057
Indiana	87,000	1.3	19,333	3,222
Iowa	60,050	0.9	13,344	2,224
Kansas	24,000	0.3	5,333	889

TABLE 24--Continued

Area	Volume Shipped	Proportion of Total	Weekly Average	Daily Average
	Sprays	Percent	Sprays	Sprays
Michigan	142,750	2.1	31,722	5,287
Minnesota	60,300	0.9	13,400	2,233
Missouri	154,250	2.2	34,278	5,713
Nebraska	36,400	0.5	8,089	1,348
North Dakota	500	a	111	19
Ohio	258,400	3.8	57,422	9,570
Wisconsin	81,200	1.2	18,044	3,007
Subtotal	1,122,400	16.4	249,422	41,570
Southwest				
New Mexico	2,700	a	600	100
Oklahoma	26,500	0.4	5,889	982
Texas	143,950	2.1	31,989	5,331
Subtotal	173,150	2.5	38,478	6,413
West				
California	3,000	a	667	111
Colorado	29,250	0.4	6,500	1,083
Idaho	1,000	a	222	37
Montana	1,200	a	267	44
Nevada	3,000	a	667	111
Oregon	1,600	a	356	59
Utah	5,500	0.1	1,222	204
Washington	66,750	1.0	14,833	2,472
Wyoming	1,500	a	333	56
Subtotal	112,800	1.6	25,067	4,178
Canada	188,000	2.7	41,778	6,963
Total	6,859,650	100.0	1,524,366	254,061

[a]Less than 0.05 percent.

other major receiving states. Only three states--Arizona, South Dakota and New Hampshire--were not included in the destinations to which Florida ferns were shipped from the Pierson Express Station in August, 1956.

Data on the major marketing areas for Florida plumosus ferns were also obtained by field interviews with growers during the 1955-56 season. Of 48 fern growers who provided these data, 35 made shipments to the Southeast, 33 to the Northeast, and 31 to the Midwest (Table 25). These data support the previous analysis, based on the railway express data, that the Southeast, Northeast and Midwest were the major distribution areas for Florida plumosus ferns.

TABLE 25

NUMBER OF FERN GROWERS INTERVIEWED WHO REPORTED SHIPMENTS TO VARIOUS DISTRIBUTION AREAS, 1955-56[a]

Size Group	Growers Interviewed	Growers Shipping to Distribution Areas						
		South-east	North-east	Mid-west	South-west	Far West	Canada	Local
		Number of Growers						
Small	16	11	10	9	4	1	1	2
Medium	15	7	9	10	6	2	2	1
Large	17	17	14	12	9	8	5	0
Total	48	35	33	31	19	11	8	3

[a]Period from July 1, 1955, through June 30, 1956.

The number of growers shipping to the Southwest and Far West, as shown in Table 25, was disproportionate to the percentage of total volume reported shipped to these areas in the previous table. This would seem to indicate a relatively small

volume shipped per grower to these areas as shown by the weekly and daily average volume data of Table 24.

Receipts and prices in markets of different sizes

A question frequently discussed during field interviews with fern growers was whether markets in small cities commanded better prices than large cities or vice versa. The fern growers interviewed did not express a common answer. Among the answers indicated by 30 growers responding to this question during the field interview, 15 gave no difference, 13 favored small cities and 2 favored large cities.

For the purpose of determining a reliable answer, an analysis based upon the actual sales reports sent to seven fern growers by the wholesale consignment florists was made. It is generally believed that consignment sales are more sensitive to price variation than those made to any other market outlet. Analysis of consignment sales provides a means for delineating the differences in pricing between different size groups of cities.

Over 30 cities were included in the analysis. They were divided into five groups according to population. The first group had populations in excess of 1,000,000 persons and included New York, Chicago, Philadelphia and Detroit. The second group had populations between 500,000 and 999,999 and included Baltimore, Cleveland, St. Louis, Washington, D.C., Boston, Pittsburgh, Milwaukee, Minneapolis and Cincinnati. The third group with populations between 250,000 to 499,999 included Newark, Indianapolis, Memphis, Columbus, Louisville, Atlanta, Birmingham and Toledo. The fourth group with populations between 100,000 to 249,999 included Dayton, Richmond, Norfolk, Albany, Chattanooga, Mobile and Wilmington. The

fifth group with populations under 100,000 included Davenport, Iowa; Terre Haute, Indiana; Johnstown, Pennsylvania; Highland Park, Michigan; Lafayette, Indiana; and Wilson, North Carolina.

It would appear that buyers in small cities paid higher prices than those in larger cities (Table 26). The metropolises like New York and Chicago have a notorious reputation in the trade as dumping places for florists' products, including plumosus ferns. The average gross price per 1,000 sprays was $14.20 for cities over 1,000,000 population and gradually increased to $17.40 in cities with populations of 100,000 to 249,000.[1] The gross price per 1,000 sprays in cities with populations under 100,000 was $17.20. This indicates that average gross prices received tended to increase as the size of the market (in terms of its population) decreased.

The average returns to growers shown in Table 26 were obtained by deducting the marketing costs of transportation, commission charges and advertising charges from the average gross prices. These marketing costs varied very little among the different size groups of cities. Consequently, the average return to growers is related directly to the gross price received. The inverse relationship between size of market and average prices received is even more consistent in these data. The last column in Table 26 indicates the returns to growers in percentage of the gross prices received. It also reflects, indirectly, differences in marketing cost by city size.

Another means of denoting pricing efficiency[2] for ferns marketed in different

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[1] These are the prices at which wholesale commission florists sold ferns to retail florists and other customers.

[2] The concept of a perfect market is used to evaluate the efficiency of price making forces in alternative market areas. If the market were perfect, it would be expected that net prices to Florida fern growers (for ferns of equivalent quality) would be the same in all markets.

TABLE 26

VOLUME OF SALES AND PRICES RECEIVED FOR FERNS SHIPPED TO WHOLESALE CONSIGNMENT FLORISTS IN VARIOUS CITIES CLASSIFIED BY SIZE OF POPULATION, 1955-56[a]

City Size Group by Population	Volume Sold		Total Returns to Growers[b]		Average Gross Price Per 1,000 Sprays[c]	Average Price Per 1,000 Sprays Recd. by Growers[b]	Prices Received by Growers as a Proportion of the Gross Price
	Sprays	Percent	Dollars	Percent	Dollars	Dollars	Percent
1,000,000 and over	2,151,900	24.3	16,378	21.7	14.20	7.60	53.5
500,000 - 999,999	2,036,750	23.0	16,618	22.0	15.00	8.20	54.7
250,000 - 499,999	2,312,300	26.2	20,724	27.5	17.00	9.00	52.9
100,000 - 249,999	2,107,250	23.8	19,469	25.8	17.40	9.20	52.9
Under 100,000	241,300	2.7	2,268	3.0	17.20	9.40	54.7
Total or Average	8,849,500	100.0	75,457	100.0	16.00	8.60	53.8

[a]Data from wholesale consignment reports of seven growers.

[b]The gross returns (prices) received by wholesale commission florists less commission, transportation and other marketing charges incurred after the product leaves the shipping point.

[c]The prices received by wholesale commission florists for the ferns.

size groups of cities is to compare the percentage of the volume sold with the percentage of the returns[3] to growers from markets in each population size group. If the percentage of the volume sold is greater than the percentage of returns to growers, it indicates a pattern, on the average, of low pricing efficiency for the group; the reverse situation indicates high pricing efficiency. Dealers in cities with populations above 500,000 reported lower prices to growers than those in cities with populations below 500,000.

The volume sold on a wholesale consignment basis by the seven growers whose records were studied tended to be rather evenly distributed among different size groups of cities except for the size group under 100,000 population. The large city size group contained fewer cities, indicating that large cities usually received greater volumes of ferns than small cities. The number of wholesale florists is larger in large cities than in small cities. It would appear then that, because of the greater supply of ferns and competition among the florists in the large cities, the prices of ferns in those cities would, in all likelihood, be lower than the prices in small cities. It should be borne in mind that this is a general statement based upon the size-group average. It may not be absolutely true for individual sales.

The average price received per bunch of plumosus ferns in different cities for wholesale consignment sales in the 1955-56 period is shown in the appendix.

Receipts and prices in markets of different distances

An other method of analyzing the pricing efficiency of various markets is to

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[3] The gross price received by wholesale commission florists less commission, transportation and other marketing charges incurred after the product leaves the shipping point.

compare the distances to markets and their respective prices and returns to growers. It would be expected that, the greater the distance of the receiving market from the producing area, the higher would be the price of the product because of increasing transportation costs. This is generally true, but not consistently so, for plumosus ferns.

An analysis utilizing the consignment data noted in previous section was made in which the cities were rearranged according to their distance from Leesburg, Florida, and divided into five groups. The first group with distances of over 1,251 miles included Minneapolis and Boston. The second group with distances between 1,001 and 1,250 miles included Davenport, Pittsburgh, Milwaukee, Chicago, Detroit, Cleveland, Albany, Toledo, New York, Newark, Columbus, Johnstown and Lafayette. The third group with distances between 751 and 1,000 miles included Indianapolis, Philadelphia, St. Louis, Wilmington, Louisville, Cincinnati, Baltimore, Terre Haute, Washington, D. C., Dayton and Memphis. The fourth group with distances between 501 and 750 miles included Norfolk, Richmand, Chattanooga, Birmingham, Wilson and Mobile. The fifth group with a distance under 500 miles included Atlanta and Tampa.

The average gross prices per 1,000 sprays shown in the sixth column of Table 27 were quite consistent for markets of different distances. As the distance to market increased, the average gross price per 1,000 sprays of fern received also increased in all market distance groups except that from 751 to 1,000 miles. That distance affected the prices received in the market is generally true. However, the inconsistency of price related to market distance in the distance group from 751 to 1,000

TABLE 27

VOLUME OF SALES AND PRICES RECEIVED FROM FERNS SHIPPED TO WHOLESALE CONSIGNMENT FLORISTS IN VARIOUS CITIES CLASSIFIED ACCORDING TO DISTANCE FROM FERN SHIPPING POINTS, 1955-56[a]

Cities Grouped by Distance	Volume Sold		Total Returns to Growers[b]		Average Gross Price Per 1,000 Sprays[c]	Average Price Per 1,000 Sprays Recd. by Growers[b]	Price Received by Growers as a Proportion of the Gross Price
Miles	Sprays	Percent	Dollars	Percent	Dollars	Dollars	Percent
1,251 and over	513,300	5	4,783	5	15.53	9.27	60
1,001 - 1,251	2,709,600	27	25,372	26	15.35	9.40	61
751 - 1,000	4,775,650	48	49,732	51	16.53	10.45	63
501 - 750	628,550	6	5,635	6	14.70	8.95	61
500 and under	1,357,200	14	12,128	12	12.59	9.06	71
Total or Average	9,984,300	100	97,650	100	15.51	9.79	63

[a]Data from wholesale consignment reports of seven growers.

[b]The gross returns (prices) received by wholesale commission florists less commission, transportation and other marketing charges incurred after the product leaves the shipping point.

[c]The prices received by wholesale commission florists for the ferns.

miles serves to indicate that distance was not the sole factor in price determination. The price of plumosus ferns is determined by the joint forces of demand and supply of various greeneries from local, West Coast and other sources. Most big metropolises like New York, Chicago, Detroit, etc., are at a distance greater than 1,000 miles from the fern producing centers in Florida. It is believed that Florida ferns had greater competition from other greeneries in the large cities beyond 1,000 miles than in smaller cities less than 1,000 miles from Florida. The prices received in the markets under 750 miles were lower than the prices received in markets beyond 750 miles. It is believed that fern growers relied on wholesale consignment outlets to a greater extent than on other sales outlets in the more distant markets.[4] Nearby markets are easier to contact for f.o.b. sales than distant markets.

The returns per 1,000 sprays to growers shown in the seventh column of Table 27 were inconsistent with market distances. This indicates that the distance to markets played a minor role in affecting returns to growers. Transportation costs, dumping rates, commission charges and advertising charges all affected returns to growers. Among these factors, transportation costs and dumping rates were considered the most important. These two factors were related to each other. If the dumping rate is high in a market, transportation costs borne by sales will be high because these costs have to be paid whether or not all ferns shipped are sold. The commission and advertising charges varied very little from one market to another. Returns to growers are primarily affected by three factors--prices received per 1,000 sprays, transportation

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[4]Wholesale florists and supply houses in these large cities usually carry large supplies of most items of greenery. The fact that large supplies often depress prices on the wholesale markets would tend to discourage retail florists from buying directly from growers; the f.o.b. price in such instances would probably be much higher than prices at wholesale florists' markets.

costs and dumping rates.

Among these three major factors affecting the returns to growers, the gross prices received and the dumping rates were considered to be more important than the transportation costs. The higher the gross prices received in a market area, the lower the percentage of the transportation cost would be of the gross price received. On the other hand, the higher the dumping rate, the higher are the transportation costs which must be borne by a unit sold. Consequently, the higher will be the percentage of transportation costs in terms of the grass price received. Thus the dumping rate of a particular market area may be indicated by the percentage that transportation costs are of the gross price received per 1,000 sprays. (Provided that gross price received and transportation cost are constant.)

Express rates are uniformly calculated throughout the nation by the Railway Express Agency.[5] If the gross price received increased by the amount of the transportation charge, the returns to growers would remain constant. If the gross price received increased more than the transportation costs increased, the returns to growers would be higher, and vice versa. The average express rates per 1,000 sprays shown in Table 28 increased $0.30 per 250 miles, but the average prices received did not increase proportionately with the express rates to markets located at various distances from fern producing areas. It appears that the average price received increased less than the express rate increased beyond the distance of 750 miles.

The express rates as a proportion of the average prices received in distant

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[5]See Table 29; 97 percent of all ferns shipped in 1955-56 moved by railway express.

TABLE 28

AVERAGE EXPRESS RATES FROM FLORIDA FERN SHIPPING POINTS AND AVERAGE PRICES RECEIVED FOR FERNS SHIPPED TO VARIOUS MARKETS, 1955-56[a]

Markets Classified by Distance from Shipping Points

Distance to Market	Average Gross Price Per 1,000 Sprays	Change in Price Recd. Between Groups	Average Express Rate Per 1,000 Sprays	Change in Express Rate Between Groups	Express Rate as a Proportion of Average Price Recd.
Miles	Dollars		Dollars		Percent
1,251 and over	15.53		2.60		16.7
		+0.18		+0.30	
1,001 - 1,250	15.35		2.30		15.0
		-1.18		+0.30	
751 - 1,000	16.53		2.00		12.1
		+1.83		+0.30	
501 - 750	14.70		1.70		11.6
		+2.11		+0.30	
500 and under	12.59		1.40		11.1
Average	15.51		2.20		14.2

[a]Data from wholesale consignment reports of seven growers.

markets were generally higher than those in the nearby markets due to a ratio effect. It is believed also that distant markets might have a higher dumping rate which caused a higher express rate to the distant groups than to closer markets. The need for retransportation and handling of ferns in distant markets also affected the freshness of the product. Most of the large metropolises are also located in the more distant markets than in those of the nearby areas. It is also probable that the more distant markets had larger selections of competing greenery than closer markets.

Transportation

Method of transportation

Information from the 50 fern growers interviewed indicated that nearly 97 percent of their shipments were made by railway express, 2 percent by air express and 1 percent by truck, bus and parcel post in the 1955-56 period. The mode of transportation by the different size groups of growers is shown in Table 29. Small growers relied almost exclusively upon railway express. Medium-sized growers shipped nearly 7 percent of their stock by air express and 92 percent by railway express. Large growers shipped 3 percent by air express and nearly 96 percent by railway express.

TABLE 29

TYPES OF TRANSPORTATION USED BY FLORIDA PLUMOSUS FERN GROWERS IN 1955-56[a]

Size Group	Kinds of Transportation					
	Railway Express	Air Express	Truck	Bus	Parcel Post	Total
	Percentage					
Small	99.7	...	...	...	0.3	100.0
Medium	92.4	6.5	0.8	...	0.3	100.0
Large	95.5	3.1	0.8	0.2	0.4	100.0
Average	96.9	2.3	0.4	0.1	0.3	100.0

[a]Period from July 1, 1955, through June 30, 1956.

Railway express plays the dominant role in transporting plumosus ferns. Florida fern growers who are far from metropolitan markets make extensive use of railway express

for comparatively cheaper transportation costs. It also provides convenient delivery of bulky crates. Plumosus ferns can be preserved, if cared for adequately, for two to three weeks between the time they are cut and the time they are used. Consideration of time in transportation is less imperative for ferns than for most other highly perishable floral products.

Most growers shipped ferns five or six days a week. Large ferneries tended to be more regular in shipments than smaller ones. The average number of shipping days and the average crates shipped per week by different size groups of growers is noted in Table 30.

TABLE 30

AVERAGE SHIPPING DAYS AND CRATES SHIPPED BY FLORIDA FERN GROWERS, 1955-56[a]

Size Group	Average Shipping Days Per Week	Average Crates Shipped Per Week
	Days	Crates
Small	4.6	18
Medium	5.1	62
Large	5.8	107
All Growers	5.2	62

[a]Period from July 1, 1955, through June 30, 1956.

The average grower shipped ferns five days each week and had a weekly shipment of 62 crates in the 1955-56 period. As fernery size increased, the number of shipping days and volume shipped also increased. The shipments were usually arranged

in such a way that a relatively constant amount of ferns was sent out each day. Thus, growers attempted to equate supply with demand. This situation was not true during the peak and slack marketing season.

The railway express data from the Pierson Station showed that about 24 percent of all fern shipments during the average week were handled on Monday. The quantities handled on other days were as follows: Tuesday, 18 percent; Wednesday, 16 percent; Thursday, 11.5 percent; Friday, 15.5 percent and Saturday, 14.5 percent (Table 31). The beginning days of the average week usually had a larger volume of shipments than other days.

TABLE 31

PERCENTAGE OF PLUMOSUS FERN SHIPPED EACH DAY OF THE WEEK, PIERSON RAILWAY EXPRESS STATION, 1956

Day of Week	Percentage of Total
Monday	24.2
Tuesday	18.2
Wednesday	16.1
Thursday	11.5
Friday	15.5
Saturday	14.5
Total	100.0

Type of containers and packages

Plumosus ferns are usually packed in crates of wood veneer. The crates are rectangular in shape with various sizes for shipping different volumes of fern. The most frequently used crate sizes are for 1,000 sprays, 2,000 sprays and 500 sprays.

The frequency of use of various sized crates for shipping plumosus ferns is

shown in Table 32. These results are based on the study of shipments from the Pierson Railway Express Station in August, 1956. The 1,000-spray crate was the dominant size used. The 2,000-spray crate came next and the 500-spray container was third. These three crate sizes were used most frequently with about 88 percent of the ferns shipped in these three types of containers. The remaining 12 percent of the ferns were shipped in containers of various sizes (noted in Table 32).

TABLE 32

SUMMARY OF SHIPMENTS FROM PIERSON RAILWAY EXPRESS STATION, AUGUST, 1956, BY NUMBER OF CRATES, NUMBER OF SPRAYS AND SIZE OF CRATES

Crate Size	Number of Crates	Number of Sprays	Percentage of Crates	Percentage of Sprays
500	79	39,500	12.5	5.6
750	121	90,750	2.1	1.1
1,000	2,155	2,155,000	52.6	40.9
1,250	71	88,750	1.2	1.2
1,500	416	624,000	7.3	9.1
2,000	1,350	2,700,000	23.6	39.4
3,000	2	6,000	0.1	0.2
Total	5,698	6,843,000	100.0	100.0

Relative express rates in terms of volume shipped

The relation between volume shipped and express rates can be denoted by the per unit cost of transportation for various quantities shipped. An analysis based on the settlement invoices of 14 wholesale consignment florists in Philadelphia, Washington, D.C.,

Chicago and Detroit to two fern growers in Pierson, Volusia County, Florida, indicates that the volume shipped per time varied from 20 bunches to 360 bunches. The volumes most frequently shipped were 20, 40, 60 and 80 bunches. The average charge per bunch of ferns for different quantities per shipment is indicated in Table 33.

One noted difference in the average railway express charge per bunch of fern stands out in Table 33. Among the various units of fern shipped per time, the unit of 20 bunches had a higher rate than other quantities shipped. The 20-bunch unit was about $0.03 per bunch higher than other units in shipments made to Philadelphia, Chicago and Detroit and $0.02 per bunch higher in shipments made to Washington, D.C. There were slight differences in express charge per bunch of ferns among various shipping units other than 20-bunch units but the differences were not as large. In considering the optimum volume to be shipped each time, growers may be interested in this situation.

Another statistic based upon the express rates obtained from the Leesburg, Florida, railway express station also indicates the difference in relative transportation cost per bunch of fern to various destinations. It is clearly shown in Table 34 that shipping 20-bunch units costs about $0.03 per bunch more than 40-bunch units to the same destinations. Consignment to wholesale florists was estimated at about 2,382,716 bunches (or 119,135,814 sprays) during the 1955-56 period. If all the consignment sales had been shipped in 20-bunch units, fern growers would have had to bear an estimated additional transportation cost of $71,481.00. This would have been 2 percent of the industry's receipts.

TABLE 33

EXPRESS RATES FOR FERNS SHIPPED FROM PIERSON, FLORIDA, TO IMPORTANT CITIES, 1955-56

Volume Shipped Per Time	Philadelphia		Washington, D.C.		Chicago		Detroit	
	Average Charge	Average Charge Per Bunch	Average Charge	Average Charge Per Bunch	Average Charge	Average Charge Per Bunch	Average Charge	Average Charge Per Bunch
Bunches				Dollars				
20	2.60	0.13	2.30	0.12	2.63	0.13	2.60	0.13
40	3.97	0.10	3.95	0.10	4.15	0.10	4.15	0.10
60	6.41	0.11	6.19	0.10	6.46	0.11	6.69	0.11
80	7.76	0.10	7.85	0.10	8.14	0.10	8.91	0.11
100	11.47	0.11	...	...	10.64	0.11	8.99	0.09
120	12.99	0.11	11.14	0.09	12.43	0.10	12.53	0.10
140	15.84	0.11	11.48	0.08	13.96	0.10	...	...
160	16.60	0.10	14.72	0.09	14.73	0.09	16.23	0.10
180	18.96	0.11	...	...	...	...	18.67	0.10
200	22.68	0.11	16.48	0.08	...	...	...	...
220	...	...	19.62	0.09	...	...	18.01	0.08
240	25.92	0.11	20.84	0.09	24.20	0.10	...	...
260	31.92	0.12	...	...	...	...	...	...
280	...	...	23.90	0.09	...	...	...	...
300	...	...	24.28	0.08	...	...	...	...
340	36.62	0.11	...	...	...	...	...	...
360	40.95	0.11	...	...	...	...	...	...

TABLE 34

EXPRESS RATES FOR FERNS FROM LEESBURG, FLORIDA,
TO IMPORTANT CITIES, 1955-56

Destination	Railway Express Charges			
	One Case		Two Cases	
	20 Bunches	Per Bunch	40 Bunches	Per Bunch
	Dollars			
Columbus, Ohio	3.18	0.16	5.15	0.13
Birmingham, Ala.	2.63	0.13	4.03	0.10
Washington, D. C.	3.07	0.15	4.90	0.12
Philadelphia, Pa.	3.12	0.16	5.03	0.13
Newark, N. J.	3.31	0.17	5.39	0.13
Milwaukee, Wis.	3.49	0.17	5.65	0.14
Canton, Ohio	3.36	0.17	5.51	0.14
Charlotte, N. C.	2.71	0.14	4.18	0.10

CHAPTER VII

MARKETING COSTS AND RETURNS

Purpose and Nature

It is the aim of this chapter to provide a general picture of the marketing costs and returns of the average plumosus fern grower in Florida. Although the data were not obtained for the purpose of studying costs and returns, some information from the field interviews can be used for this purpose.

Marketing of ferns begins with cutting, as stated in previous chapters, and includes grading, packing, selling and delivering. Costs involved in the different marketing processes include labor costs of cutting, grading and packing; material costs of ice and crates; transportation costs of local delivery to express stations plus railway express charges; selling costs of commission and advertising charges; and miscellaneous costs of office salaries, supplies, telephone service, postage, light and power. Since data on all the cost items were not obtained, only the available sources of information will be utilized in estimating marketing costs.

Marketing costs and returns differ by types of market outlets. Selling on consignment to wholesale florists includes some special costs such as commission charges, advertising costs and railway express charges which are not borne by growers if their shipments are sold on an f.o.b. basis. For consignment sales to wholesale florists, the average gross return reported was $16.00 per 1,000 sprays. After deducting charges for commissions, advertising and railway express (a total of $6.96), the return

to growers was $9.04 per 1,000 sprays of fern in the 1955-56 season. This return is the amount the grower received from the average consignment sale. Returns to growers for direct sales to wholesale florists were $8.90 per 1,000 sprays. For direct sales made to retail florists, the price received was $10.27 per 1,000 sprays.[1] From these returns must be deducted those marketing costs common to all types of market outlets in order to arrive at a net return to growers. These common marketing costs are labor for cutting, packing and grading; material costs for crates and ice; and miscellaneous costs of office salaries, supplies, telephone service, postage, travel, etc. These common cost items were evaluated by different size groups of growers in order to compare their efficiencies on a per unit basis.

Marketing Labor and Supply Costs

The unit used for estimating costs is 1,000 sprays or 20 bunches of ferns. All unit costs listed were derived from the data collected from the survey of growers. For example, the average cutting cost per 1,000 sprays of fern was derived from the number used in the cutting crew per day, average hours worked by cutting crews per day, average shipping days per week, wages of cutting crews and average marketing volume per year. All these data were obtained from field interview records. The method of estimation is shown in Tables 35 and 36. First, the total number of hours worked per year in cutting was estimated. Then,based upon the estimated total hours, the total cost of cutting was divided by the annual marketing volume in order to obtain the per unit cost of cutting.

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[1] See Table 20 on page 57.

TABLE 35

AVERAGE LABOR HOURS USED FOR CUTTING FERNS, 1955-56[a]

Size Group	Number in Crew	Average Hours Per Crew	Average Hours Per Day	Average Shipping Days Per Week	Average Hours Per Week	Shipping Weeks Per Year	Average Hours Per Year
Small	1.4	4.1	5.7	4.6	26	52	1,352
Medium	3.7	4.7	17.0	5.1	87	52	4,524
Large	7.0	6.2	43.0	5.8	240	52	12,480

[a]Period from July 1, 1955, through June 30, 1956.

TABLE 36

ESTIMATED CUTTING COSTS PER 1,000 SPRAYS OF FERN, 1955-56[a]

Size Group	Average Hours in Cutting Per Year	Average Wage for Cutting Per Hour	Average Cutting Cost Per Year	Average Volume Per Year	Average Cutting Cost Per 1,000 Sprays
	Number	Dollars	Dollars	1,000 Sprays	Dollars
Small	1,352	0.90	1,217	539	2.25
Medium	4,524	0.90	4,072	2,548	1.60
Large	12,480	0.90	11,232	4,610	2.43

[a]Period from July 1, 1955, through June 30, 1956.

The estimated average cutting cost per 1,000 sprays of fern was $1.60 for medium-sized growers, $2.43 for large growers, and $2.25 for small growers. This estimate is higher than the actual cost of cutting by individuals working in crews.

They are usually paid $0.80 to $1.50 per hour or $1.50 per 1,000 sprays. The difference between the estimated wages and the wages actually paid out for cutting may be due to the use of unpaid family labor in the cutting operation. The estimate was based on total annual cutting hours. These total cutting hours do not necessarily mean hired labor or out-of-pocket wages. Many of the small growers may do all the cutting, grading and packing themselves without any out-of-pocket expenses. This estimate serves only as a yardstick for comparing efficiency between different size groups of growers.

The method used for computing the per unit cost of packing and grading is the same as that used for estimating per unit cost of cutting ferns (Table 37). The average hourly wage for packing and grading was much lower than the average cutting wage because less skilled labor was employed in packing and grading. The medium-sized growers were still the most efficient group. Their average cost was $0.28 per 1,000 sprays for packing. The small growers were second with $0.48 per 1,000 sprays and the large growers were third with $0.63 per 1,000 sprays (Table 38). The higher labor cost for large growers may not mean inefficiency in the use of labor because the large growers practiced grading to a larger extent than small and medium-sized growers. Large growers also received a higher return per 1,000 sprays than other size groups.

The average amount of ice used for packing was estimated on a grower size basis (Table 39). The crate sizes used in the estimate were based on those of shipments from the Pierson Railway Express Station in August, 1956. Small growers used about 34,000 pounds of ice annually, medium-sized growers used about 109,000 pounds and large growers used around 168,000 pounds.

TABLE 37

AVERAGE LABOR HOURS USED ANNUALLY IN PACKING AND GRADING FERNS, 1955-56[a]

Size Group	Number in Crew	Average Hours Per Crew	Average Hours Per Day	Average Shipping Days Per Week	Average Hours Per Week	Shipping Weeks Per Year	Average Hours Per Year
Small	1.9	1.0	1.90	4.6	9	52	468
Medium	3.3	1.5	4.95	5.1	25	52	1,300
Large	6.7	2.8	18.76	5.8	109	52	5,668

[a]Period from July 1, 1955, through June 30, 1956.

TABLE 38

ESTIMATED PACKING AND GRADING COSTS PER 1,000 SPRAYS OF FERN, 1955-56[a]

Size Group	Average Hours Per Year	Average Wage Per Hour	Average Cost Per Year	Average Marketing Volume Per Year	Average Packing and Grading Cost Per 1,000 Sprays
	Number	Dollars	Dollars	1,000 Sprays	Dollars
Small	468	0.55	257	539	0.48
Medium	1,300	0.55	715	2,543	0.28
Large	5,668	0.55	3,117	4,910	0.63

[a]Period from July 1, 1955, through June 30, 1956.

The average cost of ice per 1,000 sprays was estimated at $0.14 for large growers, $0.17 for medium-sized growers and $0.22 for small growers (Table 40). Large growers had a lower average ice cost per 1,000 sprays than other size groups

TABLE 39

AVERAGE ANNUAL SHIPMENTS AND AMOUNT OF ICE USED BY SIZE GROUPS OF PLUMOSUS FERN GROWERS, 1955-56[a]

Size Group	Average Crates Shipped Per Year	Average Pounds of Ice Per Crate	Total Pounds of Ice Used Per Year
Small	66 (500-spray size)	20	1,320
	468 (1,000-spray size)	28	13,104
	402 (2,000-spray size)	48	19,296
			33,720
Medium	226 (500-spray size)	24	5,424
	1,612 (1,000-spray size)	30	48,360
	1,386 (2,000-spray size)	40	55,440
			109,224
Large	389 (500-spray size)	15	5,835
	2,782 (1,000-spray size)	24	66,768
	2,393 (2,000-spray size)	40	95,720
			168,323

[a]Period from July 1, 1955, through June 30, 1956.

TABLE 40

ESTIMATED ICE COST PER 1,000 SPRAYS OF FERNS, 1955-56[a]

Size Group	Average Ice Used Per Year	Cost of Ice Per 100 lbs.	Total Cost for Ice Annually	Average Crates Shipped Per Year	Average Cost of Ice Per 1,000 Sprays
	Pounds	Dollars	Dollars	Number	Dollars
Small	33,720	0.60	202	936	0.22
Medium	109,224	0.50	546	3,224	0.17
Large	168,323	0.45	757	5,564	0.14

[a]Period from July 1, 1955, through June 30, 1956.

because of larger quantities purchased and less waste in using ice for packing. Because of the relative quantities purchased, the prices paid per 100 pounds of ice were lowest for large growers and highest for small growers.

Data on the average number of crates shipped per year in Table 39 were separated into different sizes in order to obtain a more accurate estimate of ice consumption than would have otherwise been possible. It is noted that small growers, on the average, used more ice per crate than large growers.

Crate costs were derived by several steps. First, the average number of crates shipped per year by different size groups of growers was tabulated. Then, the average cost per crate was calculated. The total annual cost for crates was obtained by multiplying the previous two items. Finally, the total annual expense for crates was divided by the crates shipped to obtain the average crate cost per 1,000 sprays. Using this method of computation, the cost per 1,000-spray crate was a pooled average cost of different sized crates.

The average crate cost did not vary significantly between the different size groups (Table 41). However, the cost to medium-sized growers was $0.01 higher than the cost to large growers. The cost to large growers was reported as being $0.01 higher than that to small growers. The range in cost for 1,000-spray crates was from $0.67 for small growers to $0.69 for medium-sized growers.

Miscellaneous costs in marketing such as office salaries, postage, telephone services, light and power were not available from the survey data. They were estimated as ranging from 20 to 30 percent of total marketing costs.[2]

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[2]The estimate is based on a case study of cost accounts in the following section.

TABLE 41

ESTIMATED CRATE COSTS PER 1,000 SPRAYS OF FERNS, 1955-56[a]

Size Group	Crates Shipped Per Year by Sizes	Average Cost Per Crate	Total Cost for Crate Annually	Total Crates Shipped Per Year	Average Cost of Crates Per 1,000 Sprays
	Crates	Dollars	Dollars	Crates	Dollars
Small	66 (500-spray size)	0.37	24		
	468 (1,000-spray size)	0.62	290		
	402 (2,000-spray size)	0.78	314		
			628	936	0.67
Medium	226 (500-spray size)	0.48	108		
	1,612 (1,000-spray size)	0.64	1,032		
	1,386 (2,000-spray size)	0.80	1,109		
			2,249	3,224	0.69
Large	389 (500-spray size)	0.40	156		
	2,782 (1,000-spray size)	0.60	1,669		
	2,393 (2,000-spray size)	0.82	1,962		
			3,787	5,564	0.68

[a]Period from July 1, 1955, through June 30, 1956.

Average Marketing Costs and Returns

Average marketing costs and returns can be approached on a grower basis, a marketing unit basis or on a per acre basis. The total annual marketing expense of cutting, grading, packing, icing and purchasing crates in Table 42 was compiled from computations which were made in previous sections. These items are the major marketing costs common to all types of market outlets.

Special cost items for consignment sales such as commission, transportation and advertising charges were deducted to arrive at the returns to growers. Miscellaneous costs of marketing, estimated at 20 to 30 percent of total marketing costs, were not

TABLE 42

AVERAGE MARKETING COSTS PER PLUMOSUS FERN GROWER, 1955-56[a]

Size Group	Items				
	Cutting	Packing and Grading	Crate	Ice	Total
	Dollars				
Small	1,217	257	628	202	2,304
Medium	4,072	715	2,249	546	7,582
Large	11,653	3,117	3,787	757	19,314

[a]Period from July 1, 1955 through June 30, 1956.

included because of lack of sufficient information.

Table 43 shows that average returns per acre after deducting estimated harvesting and marketing costs from cash receipts[3] were highest for medium-sized growers. Large growers were second and small growers last. Production costs were estimated at $400 to $500 per acre and fixed costs of interest, insurance, taxes and depreciation were estimated at $100 per acre. By deducting production and fixed costs from the average net returns per acre from marketings noted in Table 43, small growers might operate to cover their costs only, medium-sized growers with a good profit and large growers with a fair profit. The larger net returns per acre to medium-sized growers might be due to a larger proportion of their acreage being under slat houses which had greater yields than hammock type ferneries. However, the initial cost of fernery construction would be greater for medium-sized growers than for other size groups

[3]Referred to hereafter as net returns from marketing.

and miscellaneous costs of interest and depreciation would be higher. The actual net returns to different size groups of growers cannot be determined accurately except by a study based on cost accounts.

TABLE 43

AVERAGE RETURNS PER ACRE FROM MARKETINGS OF PLUMOSUS FERNS, 1955-56[a]

Size Group	Average Gross Returns Per Grower[b]	Average Marketing Costs Per Grower[c]	Average Net Returns from Marketings	Average Acreage Per Grower[d]	Average Net Returns Per Acre from Marketings
	Dollars	Dollars	Dollars	Acres	Dollars
Small	4,793	2,995	1,798	2.9	620
Medium	23,804	9,856	13,948	11.9	1,172
Large	46,847	25,108	21,739	30.0	725

[a]Period from July 1, 1955 through June 30, 1956.

[b]See Table 15, page 49.

[c]Includes miscellaneous costs based upon 30 percent of total marketing costs in Table 43.

[d]See Table 5, page 23.

The costs and returns of a firm are usually affected by its size (or scale). The optimum level of business scale refers to the lowest average cost combination which would bring about the highest return to a firm under a purely competitive market situation. Firms operating in pure competition are, in the long run, forced by the pressure of entry and exit of other firms to build plants of lowest-cost scale and to use them at the optimum rate. The optimum rate of output is a short run concept based on

the present scale of operation. The optimum scale of a firm is a long run concept. All firms will move in the latter direction under the pressure of pure competition. Product pricing under pure competition depends upon the average costs of marginal firms in the industry. Marginal firms are those least efficient firms whose returns barely cover their costs. The more efficient firms in the industry would have greater profit margins.

The market for Florida plumosus ferns is very competitive. There are approximately 400 ferneries in Florida. Numerous florists' shops in the United States and Canada are their customers or sales agents. Many small growers in the fern industry are doubtless marginal firms which cover only their operating costs. Returns to various size groups of growers were slightly different due to the variations in their market outlets, the degree of grading practiced, management abilities and type of ferneries. The margin between costs and returns for the different size groups of growers may indicate their efficiency in operation and the maximum scale of a firm. The average marketing cost per 1,000 sprays of fern and the average net returns from marketings by different size groups of growers are shown in Table 44.

The average marketing cost per 1,000 sprays by size of growers was compiled in Table 44 from the data in Tables 36 to 41. The average net returns from marketings were obtained by deducting average marketing costs from average gross returns. The table indicates that the medium-sized growers had the lowest marketing costs and the highest average net returns from marketings per 1,000 sprays of fern. The large growers were highest in both marketing costs and in gross returns and were second highest in average net returns from marketings. Small growers were second lowest in marketing

costs but lowest in gross return and average net returns from marketings per 1,000 sprays. In general, large growers were the most efficient in selling and thereby received the highest gross returns per 1,000 sprays of fern. However, large growers had higher labor costs than small and medium-sized growers. The costs of cutting, packing and grading were highest among large growers. Small growers had fewer out-of-pocket labor costs but also had the lowest gross returns. As a result, it was inevitable that small growers received the lowest average net returns from marketings. The medium-sized growers appear to approach most nearly the optimum scale for a firm in the fern industry.

TABLE 44

AVERAGE MARKETING COSTS AND RETURNS PER 1,000 SPRAYS OF PLUMOSUS FERNS, 1955-56[a]

Size Group	Cutting Costs	Packing and Grading Costs	Crate Costs	Ice Costs	Average Marketing Costs	Average Gross Returns[b]	Average Net Returns from Marketing
			Dollars				
Small	2.25	0.48	0.67	0.22	3.62	8.89	5.27
Medium	1.60	0.28	0.69	0.17	2.74	9.36	6.62
Large	2.37	0.63	0.68	0.14	3.82	9.54	5.72

[a]Period from July 1, 1955, through June 30, 1956.

[b]See Table 20, page 57.

The average net return per 1,000 sprays of ferns from marketings is not a figure which represents a profit to fern growers. The fixed costs of interest, insurance, taxes, and depreciation and the production costs of fertilizing, spraying, dusting, mowing,

weeding, etc., were not included in the analysis due to lack of data. It is estimated that production costs amounted to $4.00, more or less, and fixed costs to about $1.00 per 1,000 sprays. Strictly speaking, the average small grower was operating at a level which did not cover all costs (including his labor costs). The large growers might barely cover their costs or have a very small profit margin in terms of their greater investment. Only the medium-sized growers, on the average, appeared to enjoy a favorable profit margin.

A Case Study

A set of cost accounts of a 50-acre fernery located in Volusia County, Florida, was used as a sample for studying costs and returns in the fern industry. This fernery was larger in size and it is believed to be operated more efficiently than the average. Cost items for the calendar year 1955 were classified into three main categories--production, marketing and fixed costs. Detailed expenses are listed in Table 45.

The main expense items are best represented in terms of percentages. The production costs included labor, materials and machinery. Labor and materials were 39 percent of the total costs while machinery costs were only 3 percent. Production costs were 42 percent of the total expense. The heavy usage of labor and little use of machines is indicated by their respective percentages. The heavy labor expense was for weeding, pruning, fertilizing, spraying and mowing.

Marketing costs consisted of materials, supplies and selling expenses. Materials and supplies such as crate, ice, light and power, etc., were the main items, accounting for 38 percent of the total costs. Sales expenses were 7 percent of total costs. All marketing expenses were 45 percent of total costs. Fixed costs, consisting of rent,

TABLE 45

EXPENSES OF A 50-ACRE FERNERY, VOLUSIA COUNTY, 1955

Item of Expense	Amount of Expense	
	Dollars	Percent
Production Costs		
Labor and Materials		
Weeding labor	5,058.28	10.0
Pruning labor	532.87	1.1
Fertilizing labor	879.61	1.7
Spray labor and materials	1,164.04	2.3
Mowing labor	449.21	0.9
Fertilizer	7,297.24	14.5
Repair	86.00	0.2
Rent	4,387.50	8.7
Subtotal	19,854.75	39.4
Machinery		
Small tools fernery	120.96	0.2
Miscellaneous	8.14	a
Miscellaneous labor	173.00	0.3
Hauling labor	291.35	0.6
1946 Dodge truck	337.32	0.7
Spray machine	337.40	0.7
Tractor and harrow	18.63	a
Mowing machine	48.61	0.1
Subtotal	1,335.41	2.7
Total production costs	21,190.16	42.1
Marketing Costs		
Material supplies		
Shipping expenses	91.19	0.2
Light and power	4,050.87	8.0
Crates	13,266.57	26.3
Labor	368.18	0.7
Miscellaneous	681.40	1.4
Ice	778.76	1.5
Gas, oil and repair	24.15	a
Repair packinghouse	85.97	0.2
Subtotal	19,347.09	38.5

TABLE 45--Continued

Item of Expense	Amount of Expense	
	Dollars	Percent
Sales expenses		
Office salaries	1,200.00	2.4
Office supplies	111.34	0.2
Postage	48.47	0.1
Traveling expense	1,603.98	3.2
Advertising	0.65	a
Miscellaneous	45.65	0.1
Telephone	326.51	0.6
Entertainment	71.21	0.1
Subtotal	3,407.81	6.7
Total marketing costs	22,754.90	45.2
Fixed Costs		
Office rent	480.00	1.0
Interest	1,009.05	2.0
Insurance	450.98	0.9
Taxes	1,217.37	2.4
Depreciation	3,298.76	6.5
Financial	4.77	a
Total fixed costs	6,460.93	12.8
Total Costs	50,405.99	100.0

[a]Less than 0.1 percent.

interest, insurance, taxes and depreciation, amounted to 13 percent of total costs.

One item of major interest in studying costs and returns is to determine these on a per unit basis. Per unit costs and returns are useful as a guide to growers in pricing their ferns. The units used are per acre and per 1,000 sprays. The latter is commonly used as a marketing unit in the floral industry. The items of gross returns, total costs, net returns and marketing volume of this 50-acre fernery in 1955 are

listed in Table 46. Per acre and per unit costs and returns are shown in Table 47.

TABLE 46

SUMMARY OF TOTAL COSTS AND RETURNS FOR A 50-ACRE FERNERY IN VOLUSIA COUNTY, 1955

Item	Amount
Sprays marketed (number)	6,723,000
Gross income	$ 61,213.91
Total cost	$ 50,405.99
Net income	$ 10,807.92

TABLE 47

SUMMARY OF COSTS AND RETURNS OF A 50-ACRE FERNERY, VOLUSIA COUNTY, 1955

Item	Per Acre	Per Thousand Sprays
	Dollars	Dollars
Average production cost	423.80	3.15
Average marketing cost	455.10	3.39
Average fixed cost	129.22	0.96
Average total cost	1,008.12	7.50
Average gross income	1,224.28	9.11
Average net income	216.16	1.61

The net return from this fernery was about 20 percent of the total cost. This is a rather high rate of return. But it should be realized that the reward to the entrepreneur is counted as a cost and is deducted from the gross returns in a strictly economic

analysis. Reward to an entrepreneur is based upon his ability and capacity in handling a business. Measurement of the return to the entrepreneur in any industry is by no means an easy task.

The total cost of around $1,000 per acre was somewhat similar to the information obtained in the field interviews. The gross return per 1,000 sprays of a little above $9.00 also coincided with the record just cited. In general, the expenses of this fernery can be regarded as fairly representative of the fern industry but net returns are likely higher than those received by the average grower.

CHAPTER VIII

MAJOR PROBLEMS IN THE FERN INDUSTRY

Problems in the fern industry can be classified into two main areas--marketing and production. These problem areas are most likely viewed by growers as equally important to the successful operation of their businesses. Marketing problems include lack of market information, seasonal gluts and shortages, relationships with wholesale commission florists, lack of grade standardization, competition from other greeneries, etc. Production problems include plant diseases, insects and fertilization practices. The emphasis in this study will be given to marketing problems.

Marketing

Market information

Market information is described as a broad term used to designate all facts and their interpretation bearing on the present or prospective market value of commodities.[1] These facts and interpretations include (1) reference to the amount, commodity characteristics, location and movement of actual and potential supplies of a commodity, including production, shipments, receipts and stocks; (2) data relating to consumer demand and consumption and to dealer demand and purchases at all stages of marketing; (3) prices at all stages of marketing; (4) analyses and

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[1] F.L. Thomsen, Agricultural Marketing (New York: McGraw-Hill Book Company, Inc., 1951), p. 281.

forecasts in terms of trends, annual movements, seasonal variation and short-term and irregular fluctuations.

The Agricultural Marketing Service of the U. S. Department of Agriculture is responsible for collecting and disseminating market news on the major agricultural products of the nation. Various marketing reports are compiled and distributed throughout the country. These market news reports, although many are not fully up to date and accurate, help farmers in understanding the demand and supply situation for a specific commodity and in predicting its price in the near future. Information available to flower growers, as compared with that available to producers of major agricultural commodities such as cattle, wheat, cotton, etc., is practically nil. The major sources of second hand information which most floral growers can obtain are in several flower trade papers.

Market news for plumosus ferns, however, rarely appears in the trade papers or in the florists' journals. Fern growers usually get their information from direct orders and settlement reports of the wholesale consignment florists. Fern growers compare the settlement reports from different florists and different localities to determine the marketing situation. Most growers lack adequate knowledge about the overall situation regarding prices, demand and supplies in different localities. Inadequate market information may induce diversity of prices in different cities or even in the same city. The variation of wholesale market prices and their inconsistency with respect to distances between localities is clearly indicated in the appendix. These variations could not be explained by differences in quality. The lack of market news may also discourage appropriate price discounts for low grade ferns. Although the

plumosus fern industry is probably not large enough by itself to bring about the initiation of market news on floral products by a public agency, the need for a market news reporting system is immediate. The establishment of a floral market news service to include information on plumosus ferns as well as on other products would be of great value in providing information to aid in current market operations and in the devlopment of long range production and marketing plans.

Seasonal characteristics

The marketing of plumosus ferns is highly seasonal with respect to both demand and supply. Plumosus ferns are used for supporting flowers in corsages, wreaths and bouquets. Weddings, funerals and holidays are the usual occasions for purchasing corsages, wreaths and bouquets. Weddings and funerals take place throughout the year, but holidays are highly concentrated in the winter and spring seasons. Thanksgiving Day in November, Christmas in December, NewYear's in January, Easter in March or April and Mother's Day in May all bring about rises in the demand for flowers and greeneries.

The supply of plumosus ferns depends largely upon weather conditions in Florida fern production areas. Generally, ferns are cut and shipped throughout the year, but spring is the peak supply season and winter the low season. Sometimes a late frost in spring, which may occur as late as April in Florida, damages plumosus ferns and results in a smaller volume available for the market. The fern supply in summer and autumn is usually more than adequate to fill demand, but the volume shipped is normally low because of competition from other greeneries and an over-all slackened market for flowers and greenery.

The peak months in marketing plumosus ferns are March, April and May; the low marketing months are July, August and September. The high volume may be double that of the low. June, October, November and December are usually intermediate between the high and low marketing seasons. January and February normally have shipments which are not much higher than those in the low marketing season of July and August, but which are lower than those in any of the other months.

The seasonal character of the volume of plumosus ferns marketed can be noted by studying Figure 5. It is based on monthly shipping data of plumosus ferns from the Pierson Railway Express Station for a period of eight years. The figures at the top of each bar are the average volume shipped each month from 1949 to 1956. The seasonal variation in volume shipped, as shown in Figure 5, has the same characteristics as illustrated in the above paragraph. The seasonal variation noted in the figure will be milder than a single year's variation because averaging eight years of data tends to smooth out the extremes.

Prices of plumosus ferns have a seasonal character inverse to that of volume shipped. In other words, prices of plumosus ferns have a negative correlation with volume shipped from season to season. During the period of peak shipments, prices of fern are usually low. On the other hand, prices of fern are high when the volume shipped is low. Winter is normally the season of high prices while spring is the season of lowest prices. Prices in summer and autumn are in between the winter high and the spring low.

Data for the study of price-volume relationships in different seasons are given in Table 48. The volume shipped is expressed in boxes while the pricing unit is indicated

Figure 5.--Average volume shipped per month, Pierson Railway Express Station, Volusia County, Florida, 1949-56.

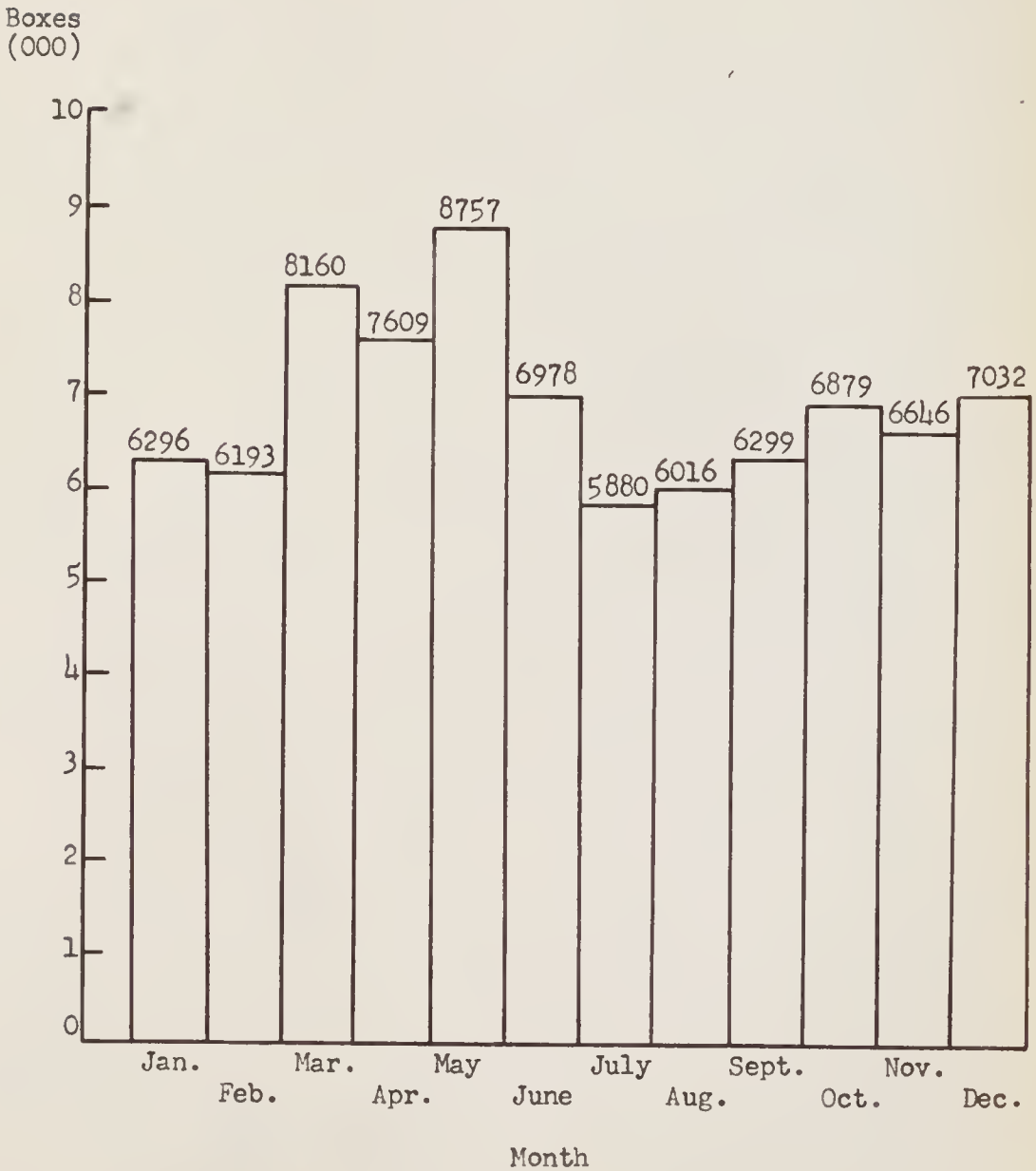


TABLE 48

SEASONAL VARIATION IN VOLUME SHIPPED AND WHOLESALE PRICES OF PLUMOSUS FERNS, JANUARY, 1955,TO AUGUST, 1956

Period	Quantity Supplied[a]		Wholesale Prices[b]		Elasticity of Demand
1955	Boxes	Index[c]	Dollars[d]	Index[c]	
January	4,600	75	17.00	107	+ 1.4
February	5,170	80	17.60	111	- 2.1
March	6,727	107	16.00	101	- 1.4
April	8,000	124	14.40	91	- 1.2
May	7,611	116	15.00	94	-15.1
June	6,227	96	15.20	96	- 4.2
July	5,287	82	15.60	99	
August	6,325	98	15.80	99	- 1.1
September	6,050	94	16.40	103	- 2.1
October	6,371	98	16.00	101	+ 0.7
November	6,201	96	15.60	98	+ 1.9
December	6,800	105	16.40	103	
1956					- 6.5
January	5,812	90	16.80	106	+ 5.6
February	5,405	84	16.60	105	- 8.5
March	9,008	139	15.40	97	-14.7
April	6,126	95	15.60	99	- 0.8
May	5,815	106	15.20	96	- 7.0
June	6,777	105	15.60	98	- 4.3
July	5,489	85	16.40	103	- 0.5
August	5,857	91	14.60	92	

[a]Quantity supplied based on the fern shipping records of the Pierson Railway Express Station, Volusia County, Florida.

[b]Wholesale prices based on the average prices received by wholesale consignment florists selling to retail florists. Data from seven plumosus fern growers.

[c]A 20-month average, January, 1955, to August, 1956, used as the base of the index.

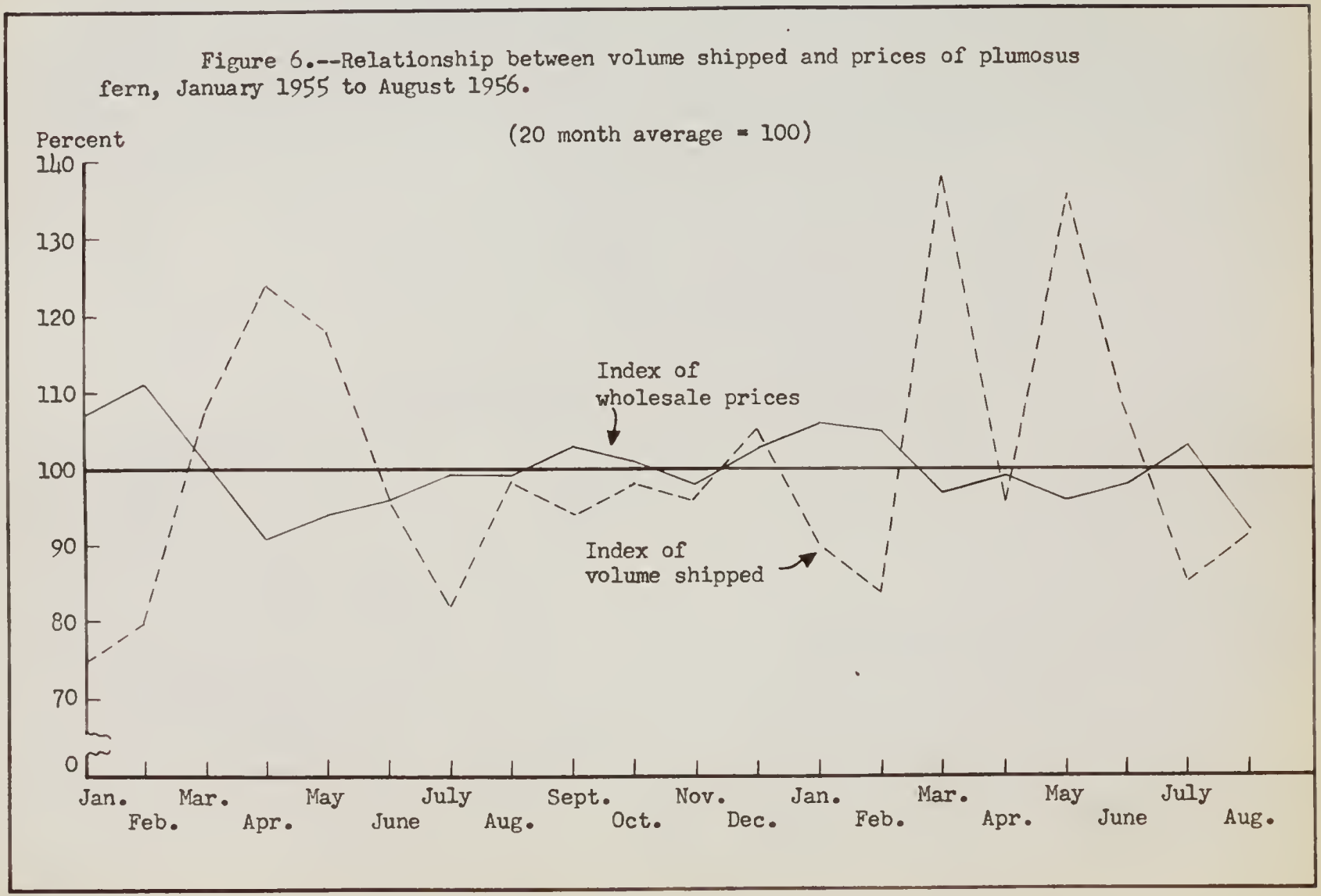
[d]Wholesale prices per 1,000 sprays.

on a per 1,000 sprays basis. The index numbers of quantity supplied and wholesale prices indicate the relative changes in supply and price over time. The quantity supplied in 1955 proceeded from a low in January and February to a high in April and May, with small changes between the high and the low in the remainder of 1955. The pattern of the quantity supplied in 1956 was similar to 1955 but with a greater variation. There was a big dip in April, 1956, believed to have been caused by a late killing frost. The wholesale prices in 1955, on the other hand, proceeded from a high in January and February, to a low in April and May, and tended upward the rest of the year. The trend of wholesale prices was downward during the spring months of 1956, but with less variation than in 1955.

The relative changes in volume shipped and wholesale prices during the 20-month period January, 1955, to August, 1956, are indicated in Figure 6. The graph shows that the wholesale-price index varied inversely with the index of the volume shipped. However, the relative changes in wholesale prices were much smaller than the relative changes in volume shipped. In other words, a big change in volume induced only a small change in price. The demand for plumosus ferns is apparently elastic at the wholesale level. The demand for plumosus ferns is usually inelastic at the retail level. As stated previously, consumption of floral items is greatest for special occasions such as weddings, funerals and holidays. During these occasions, people buy made-up floral items as a necessity without giving too much consideration to price. The consumption of made-up floral items ordinarly does not vary greatly with price changes.

Using the quantity (supply) as the independent factor and wholesale prices as the dependent factor, a negative linear relationship was obtained. The equation of this

Figure 6.--Relationship between volume shipped and prices of plumosus fern, January 1955 to August 1956.



Notes:

Volume shipped based on all fern shipments from Pierson Railway Express Station, Volusia County.

Prices based on the average consignment wholesale prices received by 7 growers.

linear relationship is $Y = 18.71 - 0.00044X$ where Y stands for the price and X represents the quantity supplied. The minus sign in the equation indicates a negative slope. The goodness of the fit of the regression line or coefficient of correlation is $r = .62$. In other words, the relationship between quantity supplied and wholesale prices is moderate. A further step was taken to test the significance of this coefficient of correlation by determining the degree of variance. The result of this analysis indicated that the coefficient of correlation was significant.

Using the established equation of the linear relationship between X and Y indicates that an increase in supply of 1,000 boxes of ferns is accompanied by a decrease in the wholesale price of ferns of $0.44 per 1,000 sprays. If one were to examine carefully the total returns of the fern industry, one would perhaps find that increasing the price of ferns decreases total returns to the industry as long as the elasticity of demand remains greater than unity. High prices usually occurred during the winter season with a low volume of fern marketed and small total returns to the industry. On the contrary, low prices usually occurred in the spring season with a high volume shipped and a large total return to the industry. The question may be raised as to the extent to which the quantity of fern supplies may be pushed in order to obtain a greater total return for the industry. From the standpoint of economics, quantity supplied could be extended to a point where returns cover average costs. Costs vary from grower to grower and price is usually determined by marginal growers in a purely competitive market. Here the question arises as to whether the "wild cat" behavior of growers in the heavy marketing season is economically justified. During the heavy marketing season in the spring and summer, many growers had surpluses of

ferns on hand without adequate market outlets. They shipped without orders and undersold each other in the hope of obtaining a greater share of the market. Growers' integrity in their marketing behavior cannot be questioned provided the shipments are made under an agreement with the wholesale commission florist to receive them. Efficiency of cost-return relationships[2] is the cornerstone of a free competitive economy. However, the problem has another angle when viewed in a social welfare concept. Efficient growers could undersell less efficient growers by decreasing their profit margin if they wanted to obtain a greater share of the market. This is the situation in the fern industry today. The small growers in 1955-56 constituted 86 percent of all growers with only 48 percent of the total acreage while the medium-sized and large growers consisted of 14 percent of the growers but they had 52 percent of the total acreage. The acreage of medium-sized and large growers continues to expand while the acreage of small growers is declining. This is a social problem indeed but it may not be a problem in a purely economic sense.

Problems in selling to wholesale commission florists

Wholesale consignment selling has long been a problem in marketing agricultural commodities. Problems arising in marketing plumosus ferns can be regarded from both the side of the growers and that of consignment wholesalers. Growers are often accused of abusing the consignment method of selling by continuing to ship their stocks to commission agents when the market is already overloaded. This usually happens during the spring and summer when the supply of ferns is abundant, but the market is filled

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[2] This refers to maximum returns and minimum costs to growers.

with other greeneries not available in the winter. To growers with surplus ferns on hand and without adequate market information to guide them in choosing the most profitable outlets the wholesale consignment florist becomes a convenient and natural outlet. The situation would be worse if growers shipped their stocks to unknown wholesale consignment florists with whom they had no previous business contract. Under current marketing laws, the wholesale consignment florist has an obligation to pay shipping charges and to sell the unordered fern at the highest possible prices. If he has a sufficient stock on hand from regular customers, disposition of these "wild cat" ferns becomes a problem. Some growers have been accused by others of using consignment as a dumping outlet for low-grade ferns. Shipping of low-grade ferns on consignment is probably induced by uncertainty as to the volume of ferns which may be sold, the prices at which they move and a general lack of confidence in wholesalers' settlement reports.

On the other hand, growers often complain about misconduct on the part of wholesale consignment florists in handling their commission sales. According to field interviews, the most frequent complaints are as follows:

1. Failure to account properly for growers' merchandise. They may place stocks coming in from different growers together and fail to account correctly for the sales which were made under each grower's account. The suspected misaccounting for sales leads many growers to the belief that commission agents are dealing unfairly with them.

2. Failure to make prompt returns. Wholesalers usually extend 60-day credit or more to retail florists, but they are committed to remit returns to growers on a weekly, semi-monthly or monthly basis. The gap between a long period of credit to retail florists and a shorter period in remitting to growers may result in stringent financial situations for many wholesalers and consequent delays in settlements with growers.

3. Sacrificing fern growers' merchandise in order to promote the sale of

flower products from which commission agents could obtain greater profits. Many growers complained that ferns might be used as gifts when some other floral products are promoted and sold.

4. Over-exaggerated claims as to the amounts dumped due to bad condition of ferns on arrival or inability to sell them over a long period of time during slack market conditions.

5. Ferns of different growers are sometimes pooled without their consent. By this suspected misconduct, a premium may accrue to low-grade ferns while good quality ferns are discounted.

6. Making false reports regarding prices received. Wholesale commission florists are sometimes accused of reporting returns lower than the going market price during the season of over supply and of being slow to pay better prices when the market price is rising.

In 1927 Congress passed the Produce Agency Act. The purpose of the Act was "to prevent the destruction or dumping, without good and sufficient cause therefore, of farm produce received in interstate commerce by commission merchants and others and to require them truly and correctly to account for all farm produce received by them."[3] A penalty of not less than $100 and not more than $3,000 or imprisonment of not more than one year will be charged upon any commission merchant who intended knowingly to defraud. This act could not be successfully carried out because of the difficulty of obtaining proof that a commission merchant committed an act knowingly and with intent to defraud. Another major limitation of the Act is that the various state licensing laws and common law require court litigation in prosecuting parties who fail to comply with the Act. This procedure is costly and long delays for fern growers who pursue relief under the provisions of this law are almost inevitable.

Many fern growers suggested means for improving relations with wholesale

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[3] U.S. Production and Marketing Administration, Service and Regulatory Announcement No. 107, March, 1950.

commission florists in the course of the field interviews. Their opinions may be classified into three main categories, as follows:

1. Many abuses in commission sales relationships are attributable to growers themselves. Growers should ship their ferns only upon orders from consignment wholesalers. Shipment should consist of good quality ferns, adequately packed. In other words, maintaining a good relationship with the wholesale commission florist is a very important factor for the grower in managing his business.

2. Recommending a new marketing law to supplement the Produce Agency Act in dealing with commission sales. The act should require wholesale commission florists to give accurate and prompt settlement reports on commission sales.

3. Stop shipping ferns to retail florists in the area where shipments are made to wholesale commission florists. Shipping ferns to both retail and wholesale commission florists in the same area is a self-defeating measure. Also, a number of growers stressed the point of stopping fern shipments to wholesale commission florists who utilized unfair trade practices.

Standardization of grades

The Bureau of Agricultural Economics of the United States Department of Agriculture established grade standards for Asparagus plumosus in 1930. Three standard grades and four standard sizes were promulgated for commercial use in marketing asparagus ferns. The standard sizes were considered a sub-classification within the different grades. Where size or stem lengths can be satisfactorily distinguished from other quality determining characteristics, it could be applied to standards for ferns. The three standard grades are (1) U. S. Fancy, (2) U. S. No.1 and (3) U. S. Commercial. The four standard sizes are (1) corsage, (2) short, (3) medium and (4) long. The detailed descriptions of the three standard grades are noted in the appendix. The standard sizes are listed as follows:

Corsage	10 to 15 inches, inclusive
Short	16 to 21 inches, inclusive
Medium	22 to 32 inches, inclusive
Long	Over 33 inches.

In practice, neither the standard grades nor the standard sizes mentioned above are fully followed in the plumosus fern marketing process. Grading of plumosus ferns is a time consuming procedure due to the physical nature of the long, soft and twisting stems. The grading process is slow and inconvenient as compared with the grading of other farm products. Growers usually grade their ferns according to length. The most commonly used grades in the industry are short, medium, long, extra long and greenhouse run. The inclusive lengths of the commercial grades are similar to the standard sizes of ferns listed above. Greenhouse run ferns are not graded, but are bunched as cut in the fernery with different grades and lengths placed together.

One thing which stands out in Table 49 is that large growers graded a larger proportion of their ferns than did medium-sized and small growers. Small growers shipped their ferns almost exclusively as greenhouse run with only 3 percent graded. Medium-sized growers had only 15 percent of their ferns graded with 85 percent as greenhouse run. Large growers reported 59 percent of their ferns graded in different lengths and 41 percent as greenhouse run. In fact, they were the only group which was following even a moderate grading program. The average returns per 1,000 sprays of ferns to different size groups of growers can be viewed as a possible indicator of the degree to which they graded their ferns. Large growers received $9.54, medium-sized growers $9.36 and small growers $8.89 per 1,000 sprays from the sale of their ferns.

TABLE 49

PERCENTAGE OF COMMERCIAL GRADES BY DIFFERENT SIZE GROUPS OF GROWERS, 1955-56[a]

Size Groups	Grades					
	Short	Medium	Long	Extra Long	Greenhouse Run	Total
	Percentage					
Small	...	3.0	...	...	97.0	100
Medium	...	14.5	...	0.8	84.7	100
Large	5.3	48.3	5.6	...	40.8	100
Average	1.6	18.7	1.7	0.2	77.8	100

[a]Period from July 1, 1955, through June 30, 1956.

For the fern industry as a whole in the 1955-56 season, 78 percent of the ferns shipped were greenhouse run and only 22 percent were graded. Of the graded ferns, the standards of grades and lengths were not uniform. The grading practices were based on individual judgment and custom rather than on the U. S. standards. The practice of grading ferns appears not to have changed significantly in recent years.

The high percentage of ungraded ferns marketed may be attributable to a number of reasons. Growers may be concerned over whether the advantages gained from grading are sufficient to offset the additional costs involved. This is, of course, a question of prime importance to growers. Many growers indicated that better grading practices would help the industry in competing with other greeneries in the long run. The cost of grading would have to be borne by individual growers before the market for ferns could be expanded by grading practices. The ability of retail and wholesale florists to recognize and pay for superior quality graded ferns is another problem

confronting growers. Without established grade standards, many misunderstandings between growers and florists doubtless arise because of various interpretations of quality placed on a given lot of ferns. Another reason for not following standard grading practices is that many growers do not produce top quality ferns. They feel that they can obtain higher prices for their poor quality products by mixing them with better quality ferns. In fact, they may well receive lower average prices than if they had graded their ferns.

A change in grading practices in marketing plumosus fern will not take place until fern growers become fully convinced that there are advantages to be gained by so doing.

Competition from other greeneries

The competition from other greens comes largely from huckleberry and other wild greens picked from the Coastal Mountain Ranges in the Pacific Northwest and shipped throughout the United States. Although higher in price, "jade" and "emerald," two foliage greens imported from Mexico, are preferred over plumosus ferns by many buyers because they last longer and do not shed so quickly. A more detailed discussion of the competition with other greenery was given in Chapter IV.

Production

The problems arising in cultivating plumosus ferns are mostly of a chemical and biological nature. Most plumosus fern growers interviewed indicated that worms and insects, weed control, fertilizers and diseases were their major problems in production. They expressed the hope that the Florida Agricultural Experiment Station

could do something about these problems. In order to understand the nature of these technical problems, they are discussed separately in the following sections.

Worms and insects

Plumosus ferns are grown on the same land throughout their bearing life, a period which may last from 20 to 30 years or more. This continuous growth of the same crop on the same ground inevitably increases the incidence of insect pests and fungus diseases which damage the quality of ferns or even destroy entire crops if not adequately controlled.

Several species of worms frequently show up in the ferneries and create difficulties for growers. Cotton cutworm, budworm, army worm, green worm and some other unknown worms appear during the rainy season at which time it is most difficult to combat them. These worms usually develop from moths' eggs laid on the tips of the most select shoots of the ferns. The worms bore holes in the tender shoots, where they are well protected from poisoned baits and sprays. No matter how small the hole, that particular shoot fails to develop into a spray of commercial value.

Worms, if not controlled, multiply rapidly in Florida's semitropical weather. The common worm-control practices are the use of liquid sprays of various combinations and poisoned baits. Most growers have their own technical "know how" in combating worms, but none of them appear to be 100 percent successful.

A number of the most common insects in the ferneries are red spider, two-spotted mite, blister beetle, grasshopper, garden fleahopper and aphid. All of these are destructive to plumosus ferns in various ways. Effective control of these insect pests depends largely on continuous and alternate treatments with newer insecticides

on the market in cases where older ones fail to do the job.

Weed control

Plumosus fern growers spend a large amount of money for weeding their ferneries. The common practice in weeding is to hire labor to pull out weeds by hand throughout much of the year. Each acre of fern ordinarily requires some 50 man-hours of work each time it is weeded; a fernery is normally weeded two or three times each year. The wage for weeders averages from 50 to 75 cents per hour. The large amount of work and the high cost of weeding has induced many fern growers to look for other means of control. The introduction of chemical weed killers has been widely adopted in recent years. These new dusts and sprays need further improvement in order to do a complete job of weed killing without hurting the plumosus fern plants.

Fertilizer

The fern growers' yearning for a well balanced fertilizer was heard throughout the course of field interviews. Plumosus ferns require heavy applications of fertilizer. The amounts and analyses applied in the ferneries vary from grower to grower, depending upon their individual practices and knowledge. The most commonly used fertilizers were 4-5-5, 4-7-5, 4-5-6, 5-5-5 and 4-5-7. Poundage used per acre of fern varied from 1,000 pounds to three tons annually. Because of the heavy applications needed, it is essential that growers use the optimum amount of fertilizer of the best adapted quality and at the right time. Much experimental work still remains to be done.

Diseases

A few diseases affecting plumosus ferns were noted. Fern growers generally

called them "rusts." These diseases are believed to be caused by fungi and are aggravated by adverse weather conditions during the summer season. "Rusts" are dark burned spots appearing on the fern stems; their presence results in a decreased market value for the product. Too much fertilizer and application of it to ferns when they are wet or damp will also result in burning. Technical methods for the control of these diseases is another subject on which further research would be desirable.

CHAPTER IX

IMPROVING MARKETING PRACTICES

Introduction

The plumosus fern industry appears to be in an unorganized and disordered marketing situation. This situation is characterized by large price fluctuations, variations in seasonal supply, lack of market information, lack of standardization of grades, cutthroat competition between growers, misunderstandings with wholesale commission florists, etc. All of these conditions tend to result in a more unfavorable status for the plumosus fern industry. This trend, if without remedy, may cause the plumosus fern industry to decline further into economic chaos in the years to come.

There are 400 growers in the plumosus fern industry. Only 55 of them are classified as large or medium-sized growers. None of the growers is large enough to control the market in terms of regulating supply and quality shipped. Nor can any of the individual growers do an effective job in promoting the industry as a whole. If growers are to improve their common lot, it appears that joint action in the form of a marketing agreement, cooperative, support of a trade association or other methods will be necessary. The present trend in the marketing of many agricultural commodities is tending in the direction of joint grower action. Trotter stated the necessity for group action in marketing practices as follows:

> Ever since civilization began, people have found it necessary to resort to group action in order to protect themselves and further their

> common interests. Our economy today is essentially a group economy. Each group or segment of the economy attempts through collective actions to increase its share of the national income. As a consequence, those segments of the economy which are poorly organized for the pursuit of common purposes tend to suffer. Government more and more becomes an arbitrator between these competing economic forces.[1]

The purpose of group action for the plumosus fern industry appears to be that of reversing the downward trend of the plumosus fern price level and to sell more plumosus ferns to the florists' trade. A corollary step is that of competing more effectively with various other foliages and greeneries, either domestically produced or imported, for a greater share of the greenery market.

Methods

Five major measures are proposed for improving the marketing practices of the plumosus industry. They are regulating supply, adopting grading practices, improving market information services, promotional work and research work. The first three deal with immediate problems of the industry such as "cutthroat" competition, "wildcat" marketing behavior, etc. The last two are proposed to cope with problems of a long-run nature such as competition from other greeneries and educational work for fern growers. These methods are discussed separately.

Regulating supply.-- The marketing of plumosus ferns, as discussed in Chapter VIII, is characterized by seasonal variation in both demand and supply. Demand for plumosus ferns at the present can be considered as given and is beyond the scope of influence by fern growers. For attaining greater efficiency in marketing plumosus ferns, a better job of regulating supplies of fern to the market is needed.

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[1] Trotter, op. cit., p. 181.

Five basic functions in regulating supplies are given by Thomsen[2] as follows: (1) distributing supplies over time through planned storage operations and in other ways, (2) controlling the quantities sold in different geographical markets, (3) adjusting the flow of the commodity into different uses, such as citrus fruit into the fresh market, canned juices and frozen concentrate, (4) maximizing returns from different consumer groups through product differentiation and other forms of differential pricing and (5) limiting the total quantity of the commodity to be marketed.

The five basic functions noted by Thomsen could all be applied in regulating the supply of plumosus ferns to the market. During the season of excess supply, top sprays of ferns can be removed or they can be left to grow longer if no adequate market is available.

Ferns also can be shipped to different markets according to the demand and pricing situation in each market. The availability of market information will certainly affect the efficiency of a seller of ferns in allocating his supplies to alternative markets.

Beside the normal usage for corsages, bouquets and wreaths, plumosus ferns can be adapted for use in other decorative functions. The more diversified the uses, the greater the outlets which can be obtained for plumosus ferns.

Diversified uses of plumosus fern require different grades for different occasions. Through differential pricing, fern growers can hope to obtain a maximum return from different grades of ferns.

During the period of over supply in the spring and summer, shipments of ferns

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[2]Thomsen, op. cit., p. 355.

should be limited. This job might be accomplished by an agreement among growers that shipments will be made only to fill specific orders from their florists' customers. On the other hand, the fern supply is relatively low during the autumn and winter seasons. During this period it might be desirable to have an information agency to advise florists where supplies may be obtained.

Adopting grading practices.--Through supplying better quality ferns and adopting standardized grading practices, it would appear that plumosus fern growers could compete more effectively with sellers of other greens and foliages. It is not uncommon to hear complaints from florists that ungraded, poor quality ferns have flooded the market. The shipping of large quantities of ferns, many of which are of low quality, to already glutted markets has doubtless been a factor in the declining trend of plumosus fern prices; it probably tended further to give retail florists a poor impression of the usefulness of plumosus ferns.

Good grading practices are necessary to remedy the weaknesses in plumosus fern quality. The U. S. Standards for Asparagus plumosus appear to be an ideal grading standard. At any rate, they offer a starting point for the industry. Educational work on grading ferns according to the U. S. Standards (or other appropriate standards) should be carried out as early as possible. Any organization of fern growers could also consult with the wholesale and retail florists' associations in promoting the use of the U. S. Standards. Growers could be required to label their grades on boxes before shipping. Through following the practice of standard grades, the following objectives may be attained.

1. Maximize returns by better satisfying demands of buyers. Plumosus ferns are used for different decorative purposes. Demand for quality

and size of ferns varies with different uses. Grading of ferns would meet the needs of buyers and perhaps mean a greater return to growers.

2. Facilitate sale by description. Standard grades provide a common language for describing various qualities of ferns ordered by florists. Misunderstandings between growers and florists would also be diminished by adopting standard grades.

3. Make price information more meaningful. Price information obtained without data by specific grades has little meaning. Likewise, prices for different grades are needed to determine market preferences in different cities.

4. Aid in price determination. Greenhouse-run ferns vary extensively in quality. Adopting standard grades will help in determining and reporting prices.

5. Aid in eliminating poor quality ferns from the market. This will be especially true during the season of over supply. Growers should select only good quality ferns for market rather than pay transportation charges on poor quality ferns which are often dumped by wholesalers.

Improving market information services. -- The lack of reliable market information is a universal cry in the different facets of the agricultural economy. Technically, fern growers rely on their individual contacts with florists for market information. Ordinarily, individual growers are acquainted with only a very small fraction of the market. Setting up a centralized organization for the purpose of obtaining demand, supply and pricing information in different market areas over time would likely be a tremendous aid to fern growers.

Market information could also be improved if the existing florists' journals could report on wholesale and retail pricing levels and volume received in important cities on a weekly basis. The publication of fern supply and price data by the Market News Service is also to be encouraged.

Promotional work. -- Growers have long urged that ferns be sent to florists'

conventions and design schools for demonstrations, creating new uses and advertising.

In case the entire industry did not see fit to support an industry advertising and promotional program, a group of cooperating growers might develop a special brand name to be used for advertising purposes. Advertising could concentrate on the special characteristics of this brand such as color, quality, duration, adaptability for decorative purposes, etc.

Research work.-- One important research project which would be of benefit to the industry is that of a study on the costs of producing and marketing plumosus ferns. This work could be done in cooperation with the Florida Agricultural Experiment Stations. Growers could be solicited to keep detailed cost accounts on standard record forms. Through cost studies, pricing efficiencies by different market outlets and in various areas could be made known to all growers for guidance in producing and marketing their products.

Fern growers also would stand to gain by cooperating with the Florida Agricultural Experiment Station in doing research work on controlling insects, worms, diseases and soil nutrition. The quickest and easiest way to improve the extent of growers' knowledge concerning these technical problems is to pool the present "know how" for the benefit of all the industry. The job may require a considerable amount of education before individual growers will be willing to cooperate with each other.

Organization for Improving Marketing Practices

One or more alternative types of organizations are needed for carrying out the practices proposed in the previous section for improving marketing practices in the plumosus fern industry. Different types of organizations have their various characteristics

and serve different purposes in the functions of marketing.

Several alternative organizations are discussed separately in order to compare their functions and adaptabilities in improving the marketing practices of the plumosus fern industry. Five types of organizations--marketing agreement, cooperative, trade association, fern commission and custom packing and handling--are presented. They are not necessarily exclusive of one another.[3]

Marketing agreement.--Marketing agreements are used by growers or shippers of farm products for maintaining prices and sustaining returns through restriction of the supply marketed, by providing for an orderly flow of the commodity through marketing channels or by regulating the quality and grade of the product shipped.

A proposed program by representatives of the industry can be submitted to the Secretary of Agriculture. If he feels that the matter is worth further consideration, a public hearing will be held in the producing area. The proposed regulations in marketing will be discussed by all parties concerned. If two-thirds or more of the growers, measured either on a numerical or on a volume basis favor the program, the Secretary can issue an order for the marketing of a specific commodity.[4]

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[3]While it is believed that all of the types of organizations noted herein will benefit growers, it should be pointed out that these organizations can act in ways that will not serve the public interest and the best long-run interest of growers. When their objectives and actions are directed toward the elimination of waste and increasing efficiency, both the short- and long-run interests of growers and the public interest probably will be served. On the other hand, if these organizations attempt to enhance grower income through measures designed to raise or stabilize prices and restrict supplies, regardless of their effect on the over-all efficiency of producing and marketing ferns, the long-run interests of fern growers and the public interest may not be served.

[4]The Agricultural Marketing Agreement Act of 1937 authorizes the Secretary of Agriculture to cover with marketing orders most fruits and vegetables and milk where proper steps have been taken and where such an order would tend to give farmers parity prices for their products. Since the Act does not provide for issuing marketing orders to cover ferns, it would be necessary to amend the Act in order for this product to be covered by its provisions.

A program proposed for a possible plumosus fern marketing agreement would need to contain the following major provisions:

1. Allotting, or providing methods for allotting, the amount of plumosus ferns in any grade, size or quality, which each grower may market in or transport to any or all markets in interstate or foreign commerce. Allotting of supplies could be under a uniform rule based upon the amount which each grower has available for current shipment, or upon the amount shipped by each grower in a prior period.

2. Determining, or providing methods for determining, the existence and extent of the surplus of plumosus ferns of any grade, size or quality. Providing for the control and disposition of such surplus and equalizing the burden of such surplus elimination or control among the producers.

3. Establishing, or providing for the establishment of, reserve pools of plumosus ferns, or of any grade, size or quality and providing for the equitable distribution of the net return derived from the sale among the growers beneficially interested therein.

4. Adopting the U.S. Standard grades or other appropriate grades for marketing of plumosus ferns.

5. Levying fees on ferns shipped in order to obtain expenses needed for operating the marketing agreement.

A marketing order under authority of the Agricultural Marketing Agreement Act of 1937, if issued, would have a distinct advantage over any other type of organization because the entire industry would be required to conform to its regulations. In any other organization, such as a cooperative or a trade association, only the members would be required to conform to the regulations established by the organization.

Trade association. -- Fern growers may also organize a trade association for the purpose of facilitating better marketing practices and for other mutual benefits. Dues would be paid for financing the trade association according to members' acreage or volume shipped.

Several things which may be accomplished by a trade association are listed below:

1. Providing transportation facilities. The trade association could arrange for the assembly of ferns at leading shipping points and contract for their delivery by truck to major terminal markets.

2. Acquiring more favorable transportation rates. Through a trade association the industry could make its voice heard more effectively in petitioning for more favorable transportation rates and services by common carriers.

3. Providing market information. A trade association could obtain market information and disseminate it to members.

4. Providing credit service. The association could serve as a clearing house of information on buyers who fail to pay their accounts. It could also operate as a debt collector, retaining attorneys or debt collection services in various areas to perform this function.

5. Encouraging grading practices. It is believed that standardized grading practices followed by the industry will help plumosus ferns to compete more effectively with other greeneries for a greater share of market.

6. Initiating promotional work. A trade association could also perform promotional and educational work. Advertising and participating in florists' design schools are two possibilities of action in this area.

The plumosus fern industry has twice established growers' associations in the past decade. Both attempts failed. One of the main reasons for the failures has been the lack of support from growers in the industry. The situation is analogous to that of the failure of many other organizations. It appears that one of the important weaknesses of many commercial associations today is that large growers or manufacturers over-exercise their influence in formulating association policies, regulations and by-laws and pay too little attention to the interests of smaller firms.

Several suggestions are made concerning the structure for a trade association to

serve plumosus fern growers. For the organization to be effective, members of the board of directors should be adequately drawn from all types of growers. Only through cooperation and support from all types of growers can the association hope to exist and prosper in serving the common interests of the industry.

A manager or executive secretary would be needed to carry out the policies laid down by the board of directors. For the best interests of the industry, he should be an impartial person and not a grower. Besides lack of support from a large segment of the industry, another reason for the failure of the past plumosus fern associations, according to some private discussions with fern producers and others, lies largely in the fact that growers served as managers. Managers who are also members have divided interests. Even where such a manager places the common interest above his own, the mere fact that he is in a position to favor his own interest leads some members to believe that he is not putting the interest of all members first.

Membership in a trade association should be limited to fern growers in Florida. All members should be required to follow regulations aimed at improving and promoting the industry as a whole in its marketing practices. In return, the association could give reliable information related to market outlets, prices and supply conditions to its members. Also, the association would be in a position to generate publicity for the industry in the florists' markets.

The chief function of the proposed association would be to provide marketing information to fern growers. The manager should keep in close contact with wholesale and retail florists in the nation. He should be able to give reliable market information on prices and the demand and supply situation in different markets. The association

should become the major nerve center for plumosus fern marketing news. A better market news service can be provided by encouraging florists to contact the association for adequate supply information during the slack production season and by giving guidance to fern growers concerning market outlets during the season of market oversupply. The association should struggle to become a clearing house for market news on demand and supply conditions.

More growers, especially small ones, may be encouraged to join the association if it is able to provide adequate market information. It is usually difficult for small growers to obtain reliable market news. By joining the association, small growers as well as large would know the market situation. Large growers frequently complained about misconduct in marketing behavior by small growers. If most small growers were in the association and were confined by its marketing regulations, large growers would be glad to join the association because of their position of leadership in the industry.

The association could also send pamphlets to all florists in the nation for advertising and publicity. Pamphlets would contain the aims of the association, marketing regulations of members, a list of names and addresses of its membership, acreages and supply conditions. The association could claim that only high quality ferns would be supplied by members and encourage the florists to contact the association for their mutual benefit. The association could require all members to use standard sized crates for ferns and to place a specially designed membership trademark on containers in order to distinguish them from those of nonmembers.

Cooperatives. -- Cooperative marketing has been used extensively by many farmers to improve agricultural marketing in the past several decades. The success or failure of a cooperative depends largely upon the efficiency of management, having

a sufficient volume of business, availability of capital and whether the character of the business is adapted to cooperation.[5]

Several of the major marketing operations which could be accomplished by a cooperative are noted below:

1. Purchasing ferns from growers and selling them to retail and wholesale florists in the nation. The cooperative could take title to the ferns and assume the risk function in selling. By doing this, the cooperative would be able to acquire a large enough volume for large-scale operations. It could possibly, after a period of time, attain sufficient monopoly power to make all selling on an f.o.b. basis.

2. Adopting standard grades and packages for shipment.

3. Obtaining market news pertaining to prices, demand and supply in different market areas.

4. Furnishing materials to fern growers for production purposes at a price lower than the going market price. Sales would likely be made at current prices but the lower prices would be achieved through patronage dividends.

5. Engaging in a program of promoting ferns. A special brand name for the cooperative's product could be developed and publicized in the florists' market.

6. Engaging also in educational work. The cooperative provides a place for fern growers to meet with one another and to discuss their common problems. It would be a good opportunity for pooling growers' knowledge on improving marketing or production practices.

The Fresh Fruit Marketing Association in Formosa can be cited as an example in illustrating the benefits which growers could enjoy by their common efforts in marketing through a cooperative. Products were pooled together by standard grades and weights so that returns to growers were based on delivered weights and grades. Shipments to various domestic cities as well as to foreign countries were made

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[5]F. L. Thomsen, op. cit., pp. 444 - 446.

according to the prices which reflected the capacities of each market in each successive period. The Association provides the packing, grading, processing and storing facilities. In case of large harvests, fruits were stored, canned and exported. Now the domestic prices of major fruits in Formosa are more stable than previously. Fruit growers exploited the maximum use of their association by setting aside funds for educational work and advertising. Through these joint efforts, fruit growers strengthened their bargaining power in the market.[6]

Fern commission.-- A bill to levy an excise tax on all plumosus ferns shipped out of the State of Florida has been proposed several times in general meetings of fern growers. The first bill proposed would have collected a tax of $0.05 per 1,000 sprays (and of $0.03 per box of 500 sprays) on all ferns shipped out of the State. Later a rate of $0.10 per 1,000 sprays was proposed. Revenue from the excise tax would have been used for commodity advertising, publicity and sales promotion of the plumosus fern industry of Florida. It was also proposed to create a Florida Plumosus Fern Commission to carry out the suggested plan. The commission would have been composed of five grower members appointed by the Governor of the State of Florida for terms of two years. These proposals were brought to the attention of State Senator William Gautier and other Volusia County legislators. A survey was made by the Volusia County Agricultural Agent to inquire about growers' opinions on the proposed tax. He sent out 300 letters on March 15, 1957, to all fern growers in Volusia County. The survey received a weak response. Of 74 respondents, 27 favored the tax and 47 gave objections.

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[6]San F. Fun, "Fresh Fruit Marketing in Formosa," The China Economist, Vol. 75, December 10, 1956, pp. 24 - 29. (Publication in Chinese language.)

As a result, the proposed bill was not introduced to the Legislature. The text of this proposed bill is contained in the appendix.

Nevertheless, the idea of a fern commission is still an alternative for improving marketing conditions which merits consideration by the industry. Most growers expressed their interest in joint action for advertising and promotional work and showed an understanding of the value of group behavior. However, many were skeptical about the effectiveness of advertising and promotional work and appeared to think largely of the immediate loss to themselves under the proposed bill. Consideration needs to be given to a possible revival of the idea for a fern commission. If it is deemed worthwhile by the industry to engage in a promotion program, sufficient funds to carry out a substantial and continuing program would be necessary. A tax of $0.10 per 1,000 sprays would mean that some $35,000 would be collected for this purpose. Although a small program could be initiated with a lesser sum, it is felt that it would not tend to be effective.

Custom packing and handling.--Custom packing and handling may be defined as the offering by a firm of the services of grading, packing and selling. A custom packing and selling organization might operate in several ways. First, it could purchase ferns outright from growers and market them. Second, it could provide grading, packing and selling services for a fee. A custom packing and handling organization could assure their buyers of better quality products and a somewhat regular supply all year around. On the other hand, custom packing should provide prompt and efficient service to customers in grading, packing, delivering and marketing.

By providing custom packing service, an organization can acquire larger quantities of plumosus ferns and most likely operate more efficiently than a firm with a smaller scale of operation.

One difficulty may arise for a custom packing service. Small growers usually provide their own labor in cutting, grading and delivering to the shipping point. If they send their ferns to custom packinghouses for marketing, they would have to pay for the services received. Thus, an additional expense would be added to their costs. This additional expense to small growers would need to be offset by a higher return resulting from the services performed by the custom organization. Otherwise, it would be very difficult to induce small growers to utilize its services.

Other difficulties may occur in utilizing custom packing services. Growers are accustomed to bunching their ferns in the field as greenhouse run. If they did not sell their ferns outright to custom packinghouses, they would have to send greenhouse-run ferns to custom packinghouses for grading and packing. A certain portion of their ferns would then be discarded in the grading process. This may produce some misunderstanding between custom packinghouses and growers unless both agree that returns should be based on quantity packed and sold rather than on quantity delivered by the grower. A pooling arrangement would appear necessary for maximum equity in a custom packing and marketing operation; this statement is based on the premise that the packinghouse does not take title to the product but acts as the agent of the grower in processing and marketing it.

CHAPTER X

SUMMARY AND CONCLUSIONS

Introduction

Plumosus ferns are a kind of greenery used largely for decorative purposes in corsages, wreaths and bouquets. The production of plumosus fern in the United States is highly concentrated in Florida. About 95 percent of the plumosus ferns which enter commercial channels in the United States are produced in Florida. The remaining 5 percent are produced in Texas, Louisiana, Kentucky, California and other states.

The purpose of this study is to estimate acreage, quantity marketed and receipts of the Florida segment of the industry; to determine the type and extent of use of various selling practices and their effectiveness; to determine the scope of marketing distribution; to estimate costs and returns to growers; and to point out the problems of the industry and their possible solutions.

The areas covered in this study include the ten fern-producing counties in Florida: Volusia, Lake, Putnam, Seminole, Marion, Palm Beach, Brevard, Duval, St. Lucie and Hillsborough. There were 400 fern growers in these counties in 1955-56. They were stratified into three groups according to size of fernery. Small growers included those who had ferneries between 0.5 to 9.99 acres; medium-sized growers from 10 to 19.99 acres; and large growers from 20 acres up.

A stratified sampling technique was applied by selecting for interviewing all

24 large growers, 15 medium-sized growers with 6 alternates and 29 small growers with 10 alternates in the four major counties--Volusia, Lake, Putnam and Seminole. A judgment sample of growers outside the major four-county production area was interviewed.

Production Practices and Acreage Distribution

Plumosus ferns were brought to Florida around the turn of the century either by John James and his wife in Yalaha, Lake County, or by Peter Pierson and his son, Eugene, of Pierson, Volusia County. The plant has proved its adaptability under Florida's growing conditions and its profitability in the florists' markets of the nation.

Production of plumosus ferns begins in the seedbed and then plants are transferred to a shaded area. Shade is provided either by lath houses or by living trees. Fertilizing, spraying, dusting, mowing and pruning are required in cultivation. Ferns are harvested the year around and require hand cutting. Ferns are shipped out of the producing area largely by railway express after being graded, bunched and packed in crates by the grower.

Volusia County is the largest plumosus fern-producing center in the nation. Three-fourths of the ferneries, with 65 percent of the plumosus fern acreage in Florida, are located in Volusia County. Volusia, Lake, Putnam and Seminole Counties contain 92 percent of the acreage of plumosus ferns in Florida. The remaining 8 percent of the acreage is scattered in Marion, Palm Beach, Brevard, Duval, St. Lucie and Hillsborough Counties. It is estimated that there were 2,072.5 acres of ferns in Florida during the 1955-56 period.

Of the 400 growers of Florida plumosus fern in Florida in 1955-56, 345 were

classified as small growers, 31 as medium-sized growers and 24 as large growers. The average size of fernery was 2.9 acres for small growers, 11.9 acres for medium-sized growers, 30 acres for large growers and 5.2 acres for all growers.

The trend in acreage of plumosus ferns in Florida has shown a slight increase from 1951 to 1956. The total acreage for small growers has had a tendency to decline. The medium-sized growers' acreage increased slightly. The large growers expanded their total acreage in most of the years. The declining trend of the small growers versus the upward trend of the medium-sized and large growers indicates a shifting of acreage from small growers to medium-sized and large growers.

The acreage of hammock type ferneries has increased faster than that of slat-house ferneries for the entire industry. The ratio of slat house to hammock fern acreage was 5 : 4 in 1955-56.

Recent Market Developments

The price level for plumosus fern has been characterized by war period increases and post-war declines. During the World War II period, evidence indicates that fern growers received substantial profits from the sale of their products. But the favorable period was short for fern growers as compared with that for agriculture as a whole. The price level of ferns was fairly stable during the post-War II period, but began to rise during the Korean War. Costs of production (as indicated by the index of prices paid by farmers) have risen steadily since World War II and overtook the fern price level during the Korean War. From 1952 to 1956 the fern price level tended downward while costs of production remained above the price received by fern growers. Most fern growers were caught in a price-cost squeeze.

The unfavorable market condition was evidenced by a declining trend in the volume of ferns shipped from the Pierson Railway Express Station from 1949 to 1956 and the gradual shifting of fern production from slat house ferneries to hammock ferneries. The declining price level and demand for ferns can be attributed to a number of factors. Competition from other greeneries and the unorganized marketing practices of plumosus fern growers stand out as major factors.

Market Outlets and Returns

A ratio estimate was utilized to arrive at the volume of sales and value of returns to the Florida plumosus fern industry. The estimate was based upon the known average marketing volume per acre of the different groups of growers times the total known acreage in that stratum or group. The quantity sold is estimated at about 383,000,000 sprays during the 1955-56 period. The estimate was also made on a county basis and the result was approximately the same. The returns to the industry during the 1955-56 season were estimated at about $3,500,000 by using the same ratio estimate methods.

Marketing of Florida plumosus ferns is confined mainly to three methods--consignment to wholesale florists, direct sales to wholesale florists and direct sales to retail florists. Of all plumosus fern sales made by the industry, nearly a third were sold on consignment to wholesalers. More than 40 percent were marketed to wholesalers on an f.o.b. basis. Retail florists purchased a fourth of the total on an f.o.b. basis. Nearly 3 percent of all ferns were sold locally to other growers. Generally speaking, large growers sold a greater proportion to retail florists than did any of the other groups of growers. Small and medium-sized growers relied more on wholesale consignment

florists than large growers.

The pricing pattern in sales made to various market outlets is indicated by the average return per 1,000 sprays for fern sales. Returns to growers were highest for fern sold directly to retail florists, averaging $10.27 per 1,000 sprays. Returns from consignment sales to wholesale florists averaged $9.04 per 1,000 sprays and those sold directly to wholesale florists, $8.90 per 1,000 sprays. Large growers received the highest cash receipts per unit of ferns marketed, averaging returns of $9.54 per 1,000 sprays, medium-sized growers ranged second with $9.36 and small growers received $8.89 per 1,000 sprays.

Marketing by consignment to wholesalers, however, was regarded by many fern growers as having less stability in prices received and greater fluctuations in demand as compared with other market outlets. Sales made on an f.o.b. basis to wholesale or retail florists were considered more stable in the price received and in volume shipped.

Market Distribution

Florida plumosus ferns are marketed throughout the United States and part of Canada. The major market areas for plumosus ferns lie east of the Mississippi River. Pennsylvania, North Carolina, Tennessee, Massachusetts and Alabama each received more than 5 percent of all shipments made during August, 1956. Georgia, New York, Florida, Ohio, Kentucky, South Carolina and Illinois were other major receiving states. According to the analysis, 45 percent of all ferns shipped went to buyers in the Southeast. Thirty-one percent were shipped to the Northeast and 16 percent to the Midwest. Buyers in the Southwest and the Far West together received 4 percent

of the total. Nearly 3 percent of all shipments went to Canada.

According to the results of this analysis, the prices received and returns to growers from wholesale consignment buyers in small cities were generally higher than those located in large metropolitan areas. The prices received were also affected by distances from market. As the distance to market increased, the average terminal market wholesale prices received in the market also increased except in the markets at a distance of 751 to 1,000 miles. In this group prices received appeared to be highest in the most distant markets. Distances played a minor role in affecting the returns to growers. The returns to growers were influenced primarily by the gross prices received, the percentage of ferns dumped and transportation costs. Of these three factors, the gross prices received and the ratio of ferns dumped appeared to be more important than transportation costs.

Transportation of Florida plumosus ferns was by the following methods: 97 percent by railway express, 2 percent by air express and 1 percent by truck, bus and parcel post deliveries. About 88 percent of the crates used for fern packing were the 1,000-spray size, 2,000-spray size and 500-spray size. The most frequent sizes of shipments were 20, 40, 60 and 80 bunches. The railway express rate was $0.03 higher per bunch for the 20-bunch unit than for larger units shipped.

Marketing Costs and Returns

Marketing costs and returns of the average fern grower in Florida were obtained by approximation because of the lack of detailed cost accounts. However, the per unit costs of cutting, packing, grading, crates and ice were estimated for different size groups of growers. Medium-sized growers proved to be the most efficient group with

lowest marketing costs per 1,000 sprays of fern and the highest average net returns from marketings among the different size groups of growers. The average net return from marketing to medium-sized growers was $6.62 per 1,000 sprays (after deducting average harvesting and marketing costs of $2.74). Large growers received an average return of $5.72 after deducting marketing costs of $3.82 per 1,000 sprays. Small growers had an average return of $5.27 with a marketing cost of $3.62 per 1,000 sprays.

Another indicator of the profitability of the fern enterprise is the average net returns from marketings per acre. Medium-sized growers were highest with $1,172, large growers second with $725 and small growers last with $620 per acre.

A case study based upon a large grower's detailed records served as an example to illustrate the cost of operating a fernery. According to this case study, production costs were about 42 percent of the total cost. Of the total costs, the production items of labor and material costs accounted for 39 percent and machinery costs for 3 percent. The marketing costs amounted to 45 percent of the total costs with 38 percent for material supplies and 7 percent for sales expenses. The fixed costs accounted for 13 percent of the total cost.

Costs and returns of the plumosus fern growers were also made on a per unit basis. The average total cost was $1,008 per acre and $7.50 per 1,000 sprays of ferns. The net income was $216 per acre and $1.61 per 1,000 sprays.

Problems of the Fern Industry

Major problems in the fern industry can be grouped into two main areas--marketing and production. Marketing problems include lack of market information, seasonal supply and demand characteristics, problems in dealing with wholesale

commission florists and competition from other greeneries.

Inadequate market information created price differences in cities which were inconsistent with distance. The lack of market news may also encourage low-grade ferns to be marketed without adequate discounts on its price.

The marketing of plumosus ferns is highly seasonal with respect to demand and supply. The demand for ferns is high in the winter and spring, but low during the summer and autumn seasons. The supply of ferns is at a peak in spring and at a low ebb in winter. Prices of ferns are determined by the forces of demand and supply. Generally speaking, seasonal prices of ferns are inversely related to volume supplied. Fern prices are usually high in winter and low in spring. During the glut season in the spring, many fern growers cut prices in the hope of obtaining a greater share of the market. Such competition tends to make for a general downward trend of fern prices and often hurts the entire industry.

Problems in connection with marketing through wholesale commission florists concern the actions both of growers and of wholesalers. Fern growers are often accused of shipping without orders from florists. Under current marketing laws, the consignment wholesale florist has an obligation to pay the shipping charges and to sell the unordered ferns. Disposition of these "wildcat" ferns becomes a problem when the market is glutted. On the other hand, fern growers frequently question the accuracy of settlement reports received from wholesale consignment florists on prices received and volume sold.

The failure of growers to grade their products is another major problem in the industry. Lack of grading may tend to lower the prices for plumosus ferns and to encourage low quality ferns to be shipped to market. It opens the way for other greeneries to

compete more effectively for a larger share of the market for florists' greens.

The major competition from other greeneries comes from Pacific Coast greens and Mexican foliages. Huckleberry, salal and sword ferns are picked wild on the mountain ranges of the West Coast and shipped throughout the nation. "Jade" and "emerald" ferns are imported Mexican foliages used widely for decorative purposes in florists' markets. Other minor competitors are varied Hawaiian ferns, Southeastern greens and several Florida greens. These greeneries are competitive with plumosus ferns in one way or another except that other Florida greens may be supplementary plants for Florida plumosus fern growers.

Problems arising in production are mostly of a chemical and biological nature. The control of worms, insects, weeds and diseases and the proper use of fertilizer are major problems confronting fern growers. Research on these problems by the Florida Agricultural Experiment Station is generally desired by fern growers.

Improving Market Practices

Based on the major marketing problems confronting the plumosus fern industry, five measures are proposed for improved marketing. They are (1) regulating supplies to the market, (2) adopting grading practices, (3) improving market information services, (4) expanding promotional work and (5) encouraging research work.

Several alternative types of organizations are needed to carry out the proposed practices. If two-thirds of the growers favor it, a marketing agreement can require the industry to adopt marketing regulations which will provide for more orderly marketing practices. A trade association could provide transportation and credit services, marketing information and promotion. A cooperative could purchase ferns from growers and

resell them to florists in order to obtain the benefits of large-scale operations. A cooperative would also be in a good position to do promotional and research work. A proposal of a fern commission to levy taxes to be used for promotional purposes on ferns sold offers another alternative. Another possible organization is a custom packinghouse; large scale operations in marketing may be attained and adequate grading practices could also be performed.

Conclusion

The solution of the outstanding problems in the plumosus fern industry is in the hands of growers themselves. Leadership in organizing the plumosus fern industry for the purpose of group action in order to realize orderly marketing is urged for the benefit of all fern growers. The consumer's dollar spent for florists' products has increased gradually from year to year.[1] This increase indicates a growing market potential for plumosus ferns. With the natural adaptability of plumosus ferns for decorative purposes for their traditional function of supporting flowers, growers of plumosus fern may, with appropriate marketing policies, be able to capture a greater share of the greenery market. Unless fern growers work together to solve their problems, it appears that this industry in Florida will decline in economic importance.

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[1] Trotter, op. cit., p. 25.

APPENDIX A

TABLE 50

AVERAGE PRICE RECEIVED PER BUNCH OF PLUMOSUS FERN CONSIGNED TO WHOLESALE FLORISTS IN VARIOUS CITIES, 1955-56[a]

City	New York	Chicago	Philadelphia	Detroit	Baltimore
Population	7,591,957	3,620,000	2,071,605	1,849,568	949,708
Distance[b]	1,086	1,147	993	1,147	905
No. of Buyers	3	5	4	4	1
Period			Dollars		
1955					
January	0.56	0.67	0.84	0.79	0.82
February	.59	.86	.85	.88	.63
March	.62	.69	.72	.76	.56
April	.44	.65	.65	.79	.47
May	.44	.50	.66	.74	.63
June	.46	.69	.61	.77	.52
July	.38	.85	.56	.72	.65
August	.35	.67	.54	.71	.62
September	...	.55	.68	.79	.63
October	.50	.77	.66	.74	.66
November	.47	.73	.65	.80	.56
December	.60	.81	.72	.85	.57
Average, 1955	0.47	0.71	0.68	0.78	0.62
1956					
January	0.72	0.82	0.74	0.85	0.69
February	.58	.92	.81	.87	.74
March	.46	.73	.67	.79	.61
April	.35	.81	.66	.73	.58
May	.46	.76	.66	.75	.65
June		.80	.69	.73	.50
July		.79	.66	.70	.55
August		.63	.52	.82	.59
Average, 1956	0.48	0.80	0.70	0.77	0.61

TABLE 50--Continued

City	Cleveland	St. Louis	Washington	Boston	Pittsburgh
Population	914,808	856,796	802,178	801,444	676,806
Distance[b]	1,132	989	856	1,313	1,124
No. of Buyers	3	1	4	2	1
			Dollars		
1955					
January			0.55		0.70
February	0.80		.58		.78
March	.68		.51	0.41	.69
April	.72		.51	.37	.55
May	.74		.48	.50	.65
June	.69		.45	.47	.57
July	.68		.51	.46	
August	.68		.54	.48	
September	.65	0.81	.51	.47	
October	.72	.73	.58	.50	
November	.74	.75	.54	.42	
December	.73	.75	.56	.61	
Average, 1955	0.71	0.74	0.52	0.47	0.63
1956					
January	0.75	0.74	0.58	0.55	
February	.70	.76	.60	.56	
March	.65	.65	.52	.48	
April	.63	.68	.56	.30	0.60
May	.69		.49	.48	.68
June	.55		.49	.31	.67
July	.61		.55		.57
August	.42		.49		
Average, 1956	0.67	0.72	0.52	0.48	0.66

TABLE 50--Continued

City	Milwaukee	Minneapolis	Cincinnati	Newark	Indianapolis
Population	637,392	521,718	503,998	438,776	427,173
Distance[b]	1,231	1,511	893	1,086	979
No. of Buyers	1	2	2	1	2
			Dollars		
1955					
January	1.00	0.84	0.84	0.73	0.99
February	1.00	.88	.90	.90	.97
March	1.00	.86	.78	.74	.98
April	1.00	.85	.68	.71	.97
May	1.00	.82	.77	.73	.97
June	1.00	.77	.71	.72	.97
July	1.01	.86	.62	.63	.96
August	1.00	.82	.68	.75	.98
September	1.00	.85	.65	.75	.98
October	1.00	.86	.69	.74	.98
November	1.00	.82	.69	.75	.97
December	1.00	.97	.70	.75	.97
Average, 1955	1.00	0.85	0.76	0.74	0.97
1956					
January	1.01	0.98	0.80	0.76	0.96
February	1.00	.99	.78	.76	.95
March	.97	.96	.80	.74	.96
April	1.00	.96	.70	.72	.96
May	1.00	.97	.75	.73	.98
June	1.00	.91	.95	.72	.99
July	1.00	.98	.58	.72	.99
August	1.02	1.01	.71	...	.97
Average, 1956	1.00	0.97	0.78	0.74	0.97

TABLE 50--Continued

City	Memphis	Columbus	Louisville	Atlanta	Birmingham
Population	396,000	375,901	369,129	331,314	326,000
Distance[b]	751	1,007	869	423	517
No. of Buyers	1	3	1	1	2
			Dollars		
1955					
January	0.66	0.84	0.72	0.69	0.71
February	.62	.79	.69	.68	.70
March	...	.78	.57	.65	.70
April	.46	.75	.54	.63	.66
May	.46	.82	.51	.62	.68
June	.50	.74	.51	.61	.63
July	.54	.81	.50	.61	.69
August	...	.80	.52	.69	.72
September	...	.77	.50	.67	.68
October	.50	.77	.50	.64	.69
November	.52	.75	.56	.65	.68
December	.50	.77	.62	.64	.69
Average, 1955	0.53	0.77	0.55	0.64	0.68
1956					
January	0.61	0.79	0.67	0.66	0.74
February	.62	.81	.61	.69	.74
March	.55	.67	.60	.69	.66
April	.52	.78	.60	.68	.66
May	.56	.75	.60	.66	.65
June	.64	.75		.63	.61
July	.59	.85		.65	.65
August		.89			.70
Average, 1956	0.58	0.76	0.61	0.67	0.67

TABLE 50--Continued

City	Toledo	Dayton	Richmond	Norfolk	Albany
Population	303,616	243,872	230,310	213,513	134,995
Distance[b]	1,090	948	740	733	1,217
No. of Buyers	3	3	1	1	1
			Dollars		
1955					
January					0.75
February					.72
March		0.77	0.89		.69
April		.75	.84		.75
May		.77	.84		.73
June		.74	.87		.66
July		.70	.89		.65
August		.71	.87		.64
September	0.80	.77		0.74	.68
October	.83	.79	.84	.73	.75
November	.84	.80	.87	.74	.73
December	.84	.79	.83	.66	.65
Average, 1955	0.83	0.78	0.86	0.72	0.70
1956					
January	0.85	0.81	0.81	0.73	0.76
February	.85	.82	.85	.75	.74
March	.85	.83	.84	.74	.69
April	.86	.82	.84	.74	.75
May		.77	.79		.75
June		.75	.84		.75
July		.75	.86		.75
August		.70			
Average, 1956	0.85	0.81	0.83	0.74	0.72

TABLE 50--Continued

City	Chattanooga	Mobile	Wilmington	Davenport	Terre Haute
Population	131,041	129,000	110,356	74,549	64,214
Distance[b]	566	528	993	1,203	973
No. of Buyers	1	1	2	1	1
			Dollars		
1955					
January		0.65	0.94	0.83	
February		.73	.97	.90	
March		.73	.97	.87	
April		.76	.94	.78	
May		.68	.94	.90	
June		.74	.95	.86	
July		.66	.89	.87	
August		...	.94	.87	
September		...	.93	.89	0.85
October		...	.94	.92	.83
November	0.84	.71	.89	.86	.84
December	.82	.73	.90	.90	.83
Average, 1955	0.84	0.71	0.97	0.87	0.84
1956					
January	0.80	0.72	0.92	0.98	0.84
February	.82	.76	.93	.89	.82
March	.81	.75	.94	.63	.85
April	.82	.74	.95	.90	.83
May		.74	.94	.78	
June		.69	.95	.75	
July		.70	.95	.47	
August			.95		
Average, 1956	0.82	0.74	0.94	0.83	0.85

TABLE 50--Continued

City	Johnstown	Highland Park	Lafayette	Wilson
Population	63,232	46,393	35,568	23,010
Distance[b]	1,071	1,147	869	604
No. of Buyers	2	1	1	1
		Dollars		
1955				
January		0.87	0.80	0.72
February		...	.78	.70
March		.87	.77	.56
April		.91	...	
May		.71	.75	
June		.78	.69	
July		.69	.70	
August		.67	.77	
September		.65	.70	
October		.79	.70	
November	0.75	.68	.85	
December	.75	.72		
Average, 1955	0.75	0.74	0.76	0.61
1956				
January	0.75	0.84		
February	.75	...		
March	.75	...		
April	.75	.80		
May	.75	.57		
June	.75	.52		
July	.75			
August	.75			
Average, 1956	0.75	0.60		

[a]Data from records of seven growers.

[b]From producing area in miles.

APPENDIX B

UNITED STATES DEPARTMENT OF AGRICULTURE
Production and Marketing Administration

U.S. STANDARDS FOR ASPARAGUS PLUMOSUS (1930)[1]

GRADES

U. S. Fancy shall consist of bunches of well trimmed sprays of Asparagus Plumosus which are mature and well shaped; free from shattering, second growths, and from damage by any cause. Unless otherwise specified, the foliage shall be of good green color. (See size)

In order to allow for variations incident to proper grading and handling, not more than 10 percent, by count, of any lot may be below the requirements of this grade but no part of this tolerance shall be allowed for sprays which are shattering.

U. S. No. 1 shall consist of bunches of well trimmed sprays of Asparagus Plumosus which are mature; free from shattering, second growths, and from damage by any cause. Not less than 60 percent, by count, of the sprays shall be fairly well shaped and the remainder shall be not badly misshapen. Unless otherwise specified, the foliage shall be of good green color. (See size)

In order to allow for variations incident to proper grading and handling not more than 10 percent, by count, of any lot may be below the requirements of this grade but no part of this tolerance shall be allowed for sprays which are shattering.

---

[1] This is a reissue of U.S. Standards for Asparagus Plumosus (1930) which were effective June 6, 1930, formerly issued by the Agricultural Marketing Service. No change is made in the text of the Standards.

The use of these standards is permissive so far as Federal laws are concerned.

U. S. Commercial shall consist of bunches of well trimmed sprays of Asparagus Plumosus which are mature; free from shattering, young second growths, and from serious damage by any cause. Unless otherwise specified the foliage shall be of good green color. (See size)

In order to allow for variations incident to proper grading and handling not more than 10 percent, by count, of any lot may be below the requirements of this grade but no part of this tolerance shall be allowed for sprays which are shattering.

DEFINITIONS OF SIZE TERMS

The following terms are provided for general description of sizes. It is not the general practice to size Plumosus uniformly; therefore, lots should not be quoted as Corsage, Short, Medium, or Long unless they have been specifically sized to meet the specified requirements. Plumosus may be quoted as "Short to Medium," "Short to Long," or "Medium to Long" in accordance with the facts:

CORSAGE	SHORT	MEDIUM	LONG
10 to 15 in. inc.	16 to 21 in. inc.	22 to 32 in. inc.	Over 33 in.

For lots which have been sized in accordance with the provisions of the above classification, the following tolerance is provided:

In order to allow for variations incident to proper sizing not more than 20 percent, by count, of any lot may not meet the size requirements; but not more than one-half of this tolerance, or 10 percent may vary not more than 2 inches above the maximum length or below the minimum length of the specified size. Length shall be considered as the over-all distance from end to end of the spray measured to the nearest whole inch.

DEFINITIONS OF GRADE TERMS

As used in these grades:

"Well trimmed" means that all noticeably damaged portions of the foliage have been neatly removed, together with as many of the lower side fronds as may be necessary to provide sufficient bare stem for proper tying and handling. In the Corsage size not more than one-half of the entire spray length may consist of bare stem; in the Short and Medium sizes not more than one-third of the entire spray length may consist of bare stem; in the Long size not more than 12 inches of the entire spray length may consist of bare stem.

"Mature" means that the spray has reached that stage of growth at which the foliage is fully developed.

"Well shaped" means that the stem of the spray is fairly stiff and fairly erect; the portion of the stem bearing the foliage does not show any crooked growth other than a slight curving or the normal characteristic drooping; the bare stem is not decidedly coiled or angular; the tip of the spray is practically perfect; the side fronds are spaced reasonably close together considering the length of the spray and with practically perfect tips.

"Fairly well shaped" means that the stem may show a reasonable amount of coiled, angular, or vine-like growth considering the length of the spray; the tip of the spray is practically perfect, and the side fronds are spaced reasonably close together considering the length of the spray.

"Badly misshapen" means that the stem is decidely coiled, or decidedly angular, or decidedly vine-like, or that the side fronds are spaced so far apart as to cause the

spray to appear decidedly lacking in foliage. Forked, topped and stump-like sprays shall be considered as badly misshapen when they appear decidedly lacking in foliage.

"Good green color" means that the spray foliage is a deep lustrous green of fresh attractive appearance.

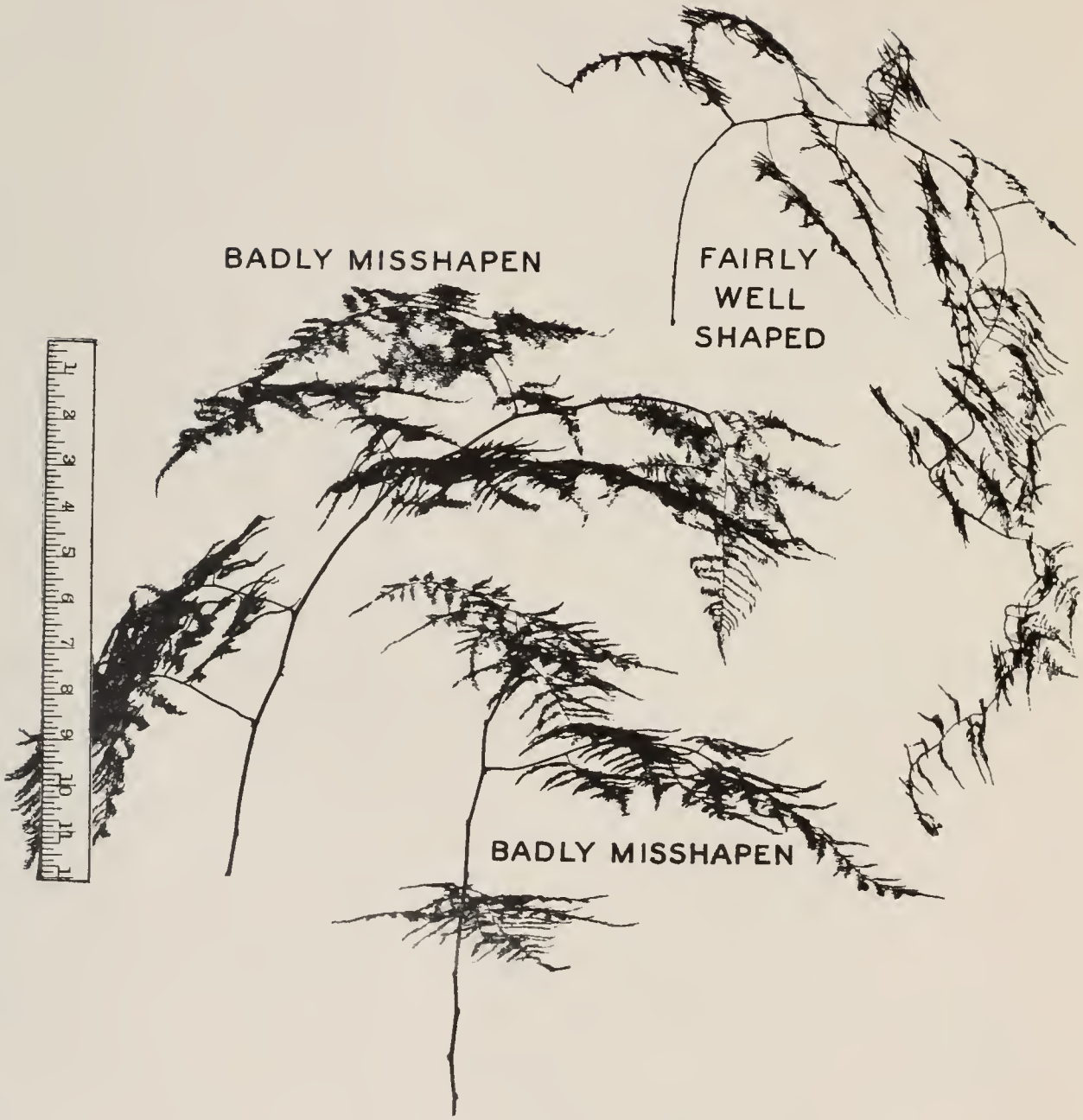
"Damage" means any material injury to the appearance of the spray caused by insects, disease, mechanical or other means.

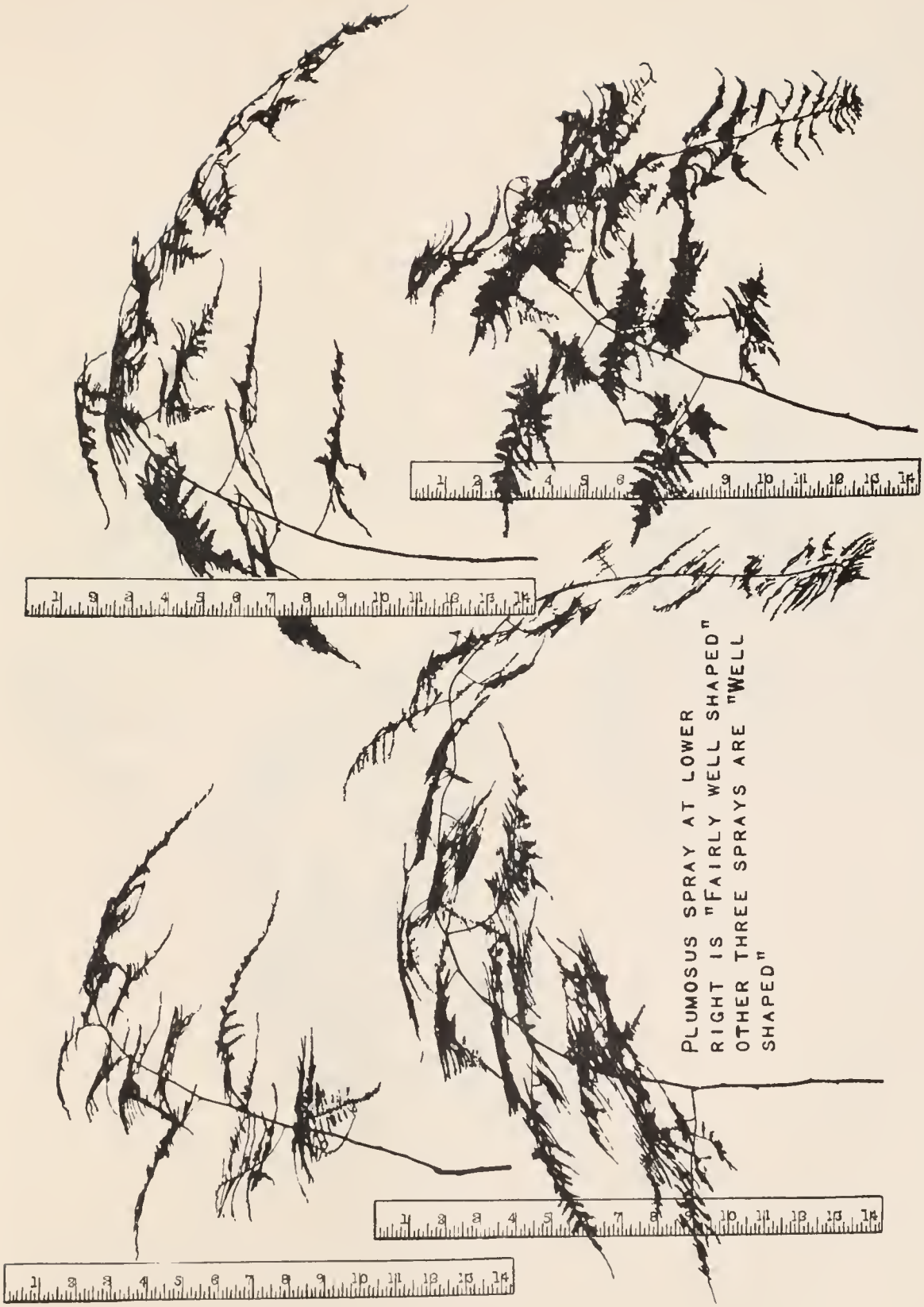
"Serious damage" means serious injury to the appearance of the spray caused by insects, disease, mechanical or other means.

Issued June 6, 1930

Reissued March 1, 1940

Chief, Agricultural Marketing Service


BADLY MISSHAPEN
FAIRLY
WELL
SHAPED
BADLY MISSHAPEN



PLUMOSUS SPRAY AT LOWER RIGHT IS "FAIRLY WELL SHAPED" OTHER THREE SPRAYS ARE "WELL SHAPED"

FORKED
STUMPED
BOBBED

APPENDIX C

AN ACT TO PROMOTE THE ASPARAGUS PLUMOSUS FERN INDUSTRY OF FLORIDA; PROVIDING AN EXISE TAX ON ALL ASPARAGUS FERN SHIPPED OUT OF THE STATE OF FLORIDA; PROVIDING SUPERVISION AND COLLECTION OF THE FUND BY_____. PROVIDING DISTRIBUTION AND USE OF THE FUND; PROVIDING EFFECTIVE DATE.

WHEREAS, Asparagus Plumosus Fern Growers of Florida have requested that an excise tax be levied and imposed on all Asparagus Plumosus fern shipped out of the State of Florida for the purpose of commodity advertising, publicity, and sales promotion of the Asparagus Plumosus fern industry of Florida through the assistance of the_____ _____. WHEREAS, such excise tax would provide between_____ per year for use by the _____ exclusively for the purposes mentioned. NOW THEREFORE,

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF FLORIDA:

Section 1. That an excise tax of five (5) cents per one thousand (1,000) sprays; three (3) cents per five hundred (500) sprays, shall be made on all fern shipped out of the State of Florida.

Section 2.

(a) There is hereby created and established a State Asparagus Plumosus Fern Commission to be known and designated as the "Florida Asparagus Fern Commission" to be composed of five fern growers and shippers who are resident citizens of the State of Florida, each of whom is and has been actively engaged in growing and shipping Asparagus Plumosus fern in the State of Florida for a period of at least five years immediately prior to his appointment to the said commission and has, during said

period derived a major portion of his income therefrom during said time of the five members of said commission at least one member shall be appointed from Volusia County and the remaining four from the State at Large.

(b) The members of such commission shall be appointed by the Governor of the State of Florida for terms of two years each, and such members shall serve until their respective successors are appointed and qualified. The regular terms shall begin on the first day of July and shall end on the 30th day of June of the second year after such appointment.

(c) No member of the Commission shall receive any salary or other compensation, but each member shall receive the sum of ten dollars per day for each day, or fraction thereof, spent by him in actual attendance in regular or special meetings of the Commission, or meetings of Committees of the Commission, or in transacting other business authorized by the Commission in the State of Florida to cover his personal expenses while in attendance thereon, together with mileage or other actual transportation expense allowed by law to State employees for actual travel to and from all regular and special meetings of said commission.

(d) The executive offices of the Commission shall be established and maintained at _____ Volusia County, Florida.

Section 3.

(a) All taxes levied and imposed under and pursuant to the provisions of this section shall be due and payable and shall be paid when the Asparagus fern is first handled in the primary channels of trade. All such taxes shall be paid to the _____ by the person first handling the Asparagus Fern in the primary

channel of trade.

(b) Payment of the taxes upon the Asparagus fern may be evidenced by stamps to be known and designated as "Florida Asparagus Plumosus Fern Advertising stamps." The commission may provide for both the use of adhesive stamp or impression by use of stamp machines to be approved by the Commission. Said stamps or impressions shall indicate the amount paid therefore and shall, in every instance be affixed to or impressions on _____.

(c) The Commission shall cause such stamps to be made and distributed for the taxes provided in this chapter and shall make regulations for the use of stamp machines and impressions thereby.

(d) All taxes levied and collected by the _____ shall be delivered to the _____ for payment into the proper advertising fund, and shall be paid into the _____ on or before the fifteenth day of each month.

(e) The powers and duties of the commission shall include the following:

(1) To adopt from time to time, alter, rescind, modify, and amend all proper and necessary rules, regulations, and orders for the exercise of its power, and the performance of its duties under this chapter.

(2) To make in the name of the Commission such advertising contracts and other agreements as may be necessary.

(3) To keep books, records, and accounts of all of its doings, which books, records, and accounts shall be open to inspection and audit by the State Auditor at all times.

(4) To purchase or authorize the purchase of all office equipment and supplies and to incur all other reasonable and necessary expenses and obligations in connection with and required for the proper carrying out of the provisions of this chapter.

Section 4. _____ is hereby authorized to plan and conduct a campaign for commodity, advertising, publicity and sales promotion of the Asparagus Plumosus Fern Industry in Florida, thru the Florida Asparagus Fern Commission; and shall turn over to _____ such funds as are collected from the assessment as provided in Section 1. The funds so collected shall be budgeted by the Commission and expended only upon their recommendations and approval by_____.

Section 5. An annual report shall be made to the_____ giving information concerning the expenditure of these funds on or before July 1st of each year.

Section 6. This Act shall not infringe upon the duties or activities of any other agency of the State of Florida.

Section 7. This Act shall take effect July 1, 1955.

APPENDIX D

C-O-N-F-I-D-E-N-T-I-A-L

FLORIDA AGRICULTURAL EXPERIMENT STATION

DEPARTMENT OF AGRICULTURAL ECONOMICS

GAINESVILLE, FLORIDA

MARKETING STUDY OF THE FLORIDA FERN INDUSTRY

(General Questionnaire)

Date_____

General

1. Name of establishment_____

2. Address_____
   Post Office County

3. Name of owner or manager_____

4. (a) Person interviewed_____(b) Position in establishment_____

5. How long have you grown ferns in Florida?_____

Acreage and Production

6. (a) What is your current fern acreage? (b) How does this compare with that in the four previous seasons?

Year	Acres		Under Slat House (Acres)		Under Hammock (Acres)	
	Own	Lease	Own	Lease	Own	Lease
Asparagus Plumosus:						
1955-56	____	____	____	____	____	____
1954-55	____	____	____	____	____	____
1953-54	____	____	____	____	____	____
1952-53	____	____	____	____	____	____
1951-52	____	____	____	____	____	____
Leather Leaf:						
1955-56	____	____	____	____	____	____
1954-55	____	____	____	____	____	____
1953-54	____	____	____	____	____	____
1952-53	____	____	____	____	____	____
1951-52	____	____	____	____	____	____
Other:						
1955-56	____	____	____	____	____	____
1954-55	____	____	____	____	____	____
1953-54	____	____	____	____	____	____
1952-53	____	____	____	____	____	____
1951-52	____	____	____	____	____	____

7. What is your fern harvesting period? _____

_____

8. What is your monthly fern shipping schedule?

Month	Asparagus No. Sprays	Leather Leaf No. Sprays
July 1955	_____	_____
August 1955	_____	_____
September 1955	_____	_____
October 1955	_____	_____
November 1955	_____	_____
December 1955	_____	_____
January 1956	_____	_____
February 1956	_____	_____
March 1956	_____	_____
April 1956	_____	_____
May 1956	_____	_____
June 1956	_____	_____
Total	_____	_____

Market Outlets and Transportation

9. How many ferns did you purchase from other growers during the past season?

Asparagus: No. Sprays_____ Price_____ Leather Leaf: No. Sprays____ Price____

10. When did you make most of these purchases?_____

11. (a) Do you grade your ferns? Yes_____ No_____

(b) If you graded them, how many of each grade did you pack in the past season?

	Grade	No. Sprays
Asparagus:	Short	_____
	Medium	_____
	Long	_____
	Extra Long	_____
	Greenhouse Run	_____
Leather Leaf:		
	_____	_____
	_____	_____
	_____	_____

12. Of your production in the 1955-56 season, how many were sold to each of the following outlets?

Asparagus:

	No. Sprays:	Avg. Price:	: Percent :Quantity:		
Consignment to Wholesale Commission Florists					
Direct to Wholesale Florists					
Direct to Retail Florists					
Other Growers					
Local "brokers"or buyers					
Other Outlets (specify):					
_____					
_____					
Total					

Leather Leaf:

Consignment to Wholesale Commission Florists					
Direct to Wholesale Florists					
Direct to Retail Florists					
Other Growers					
Local "brokers" or buyers					
Other Outlets (specify):					
_____					
_____					
Total					

13. At periods when you have a flush cut of ferns, to what outlet or outlets do you ship your excess supply? _____

_____

14. How do you rate large metropolitan wholesale commission markets as compared to wholesale markets in smaller cities with regard to the level of prices paid for your ferns? _____

_____

15. How do you keep informed of the market situation regarding demand, supplies, prices, etc.? _____

_____

16. (a) Are you personally acquainted with your buyers? Yes_____ No_____
(b) What proportion of them do you know? _____ Percent.

17. What is the number of buyers to whom you ship?

Wholesale Commission Florists	_____
Wholesalers (direct sales)	_____
Retailers	_____
Total	_____

18. What is your primary distribution area? Northeast:_____ Southeast:_____ Southwest:_____ Midwest:_____ Far West:_____ Other (specify): _____

19. Are there state regulations or other barriers which prohibit you from shipping to certain markets? Yes_____ No_____ If so, please explain _____

_____

_____

_____

_____

20. How often do you receive settlement reports from the wholesale florists to whom you consign ferns?

	No. of Wholesalers
Weekly	_____
Semi-monthly	_____
Monthly	_____
Irregularly	_____
Total	_____

21. What suggestions have (ethics, legal, etc.) for improving business relationships with wholesale commission florists? _____

_____

_____

22. What methods of transportation did you use in shipping your ferns in the past season?

(a) Asparagus:

	No. Sprays	Percent of Total
Railway Express		
Air Express or Freight		
Truck		
Bus		
Parcel Post		
Other:		
_____		
_____		
_____		
Total		

(b) Leather Leaf:

Railway Express		
Air Express or Freight		
Truck		
Bus		
Parcel Post		
Other:		
_____		
_____		
_____		
Total		

Marketing Charges and Costs

23. How many members of your family work in the fernery? _____

24. How many people do you hire? _____ Full time _____ Part time _____
Number of months hired _____

25. How many people do you use in your cutting crew? _____

26. How long does it take this crew to cut an average day's shipment?
Total hours _____

27. How many people do you use in grading and packing ferns?_____

28. How long does it take to pack an average day's shipment?

    Total hours_____

29. How many days per week do you ship ferns?_____

30. How many crates do you ship per week?_____

31. What is the cost of your shipping crate (each)?

    500 size _____
    1000 size _____
    2000 size _____

32. How much ice is put in the crate and what is its cost?

    500 size _____ _____
    1000 size _____ _____
    2000 size _____ _____

33. How long does it take to perform the following jobs on an acre of ferns?

(a) Slat type:

Job	Hours per Acre	Times per Year	Total
Fertilizing			
Spraying			
Dusting			
Mowing			
Weeding:			
Hand			
Spray			

(b) Hammock type:

Fertilizing			
Spraying			
Dusting			
Mowing			
Weeding:			
Hand			
Spray			

34. Is there any difference in labor requirements between Leather Leaf and Asparagus Plumosus fern growing? _____

35. What do you pay per hour for hired labor? _____

Research Problems and Miscellaneous

36. What are some of the major problems on which you (yourself or the entire industry) need research or other public assistance? _____

_____

_____

37. What changes or improved practices would be required to result in a more competitive market for ferns? (Enter any other general comments here)

_____

_____

_____

_____

_____

_____

_____

CNS:cc - 7/21/36
Exp. Sta., Ag.Ec. - 100

SCHEDULE ON FERN DISTRIBUTION

Record No.	Destination		Consignee	Date Shipped	Type Buyer	No. Cases	Case Size	Total Sprays	Type Fern	Total Wt.	Shipper	Charges
	City	State										

CNS:cc 8/20/56
Exp. Sta., Ag. Ec. - 500

FERN MARKETING STUDY SCHEDULE
DETAILED MARKETING RECORD

Shipper _____

Record No.	Date Shipped	Buy-er	Loca-tion	Me. Sh.	Type Buyer	Type Fern	Grade	Sprays Sold	Car'd Over	Dump

CNS:cc - 7/31/56
Exp. Sta., Ag. Ec. - 500

Continued

Page _____

Location _____

Total Gross Price	Transportation	Commission	Adv. and Other	Total Net Price	Gross Per Spray	Net Per Spray

BIBLIOGRAPHY

Chew, Yuen-Cheh. "Agricultural Marketing Problems in Formosa," The China Economist, Vol. 75 (December 10, 1956), pp. 1-4. (Publication in Chinese language.)

Fun, San F. "Fresh Fruit Marketing in Formosa," The China Economist, Vol. 75 (December 10, 1956), pp. 24-29. (Publication in Chinese language.)

"Pierson Top Fern Production Area," The Florida Times Union, Vol. 91 (June 17, 1956), p. 20.

"Pioneer in Plumosus," The Florists' Review, Vol. 62, No. 1606 (September 6, 1928), p. 37.

Platt, W. J. Asparagus Fern Culture. Florida Agricultural Extension Service Bulletin 153. Gainesville: 1952.

Potter, Charles H. "A Green Harvest," The Florists' Review, Vol. 119, No. 3077 (November 22, 1956), p. 70.

Rada, Edward L. Mainland Markets for Hawaiian Flowers and Foliage. University of Hawaii Agricultural Economics Report 9. Honolulu: 1952.

Stoutamire, R. Growing Asparagus Plumosus in Florida. Florida State Department of Agriculture Bulletin 12. Tallahassee: 1948.

Thomsen, F. L. Agricultural Marketing. New York: McGraw-Hill Book Company, 1951.

Trotter, Warren K. Problems in Marketing Florist Crops. Cornell Agricultural Experiment Station A. E. 983. Ithaca: 1955.

U. S. Agricultural Marketing Service, The Farm Income Situation (FIS 165). September, 1957.

U. S. Bureau of the Census. United States Census of Agriculture: 1950. Vol. V, Special Reports, Part 1, Horticultural Specialties, Washington: Government Printing Office, 1952.

BIBLIOGRAPHY- Continued

U. S. Department of Agriculture. Major Statistical Series of the United States Department of Agriculture (Agricultural Price and Parity). U. S. Department of Agriculture Handbook No. 118, Vol. 1. Washington: Government Printing Office, 1957.

U. S. Production and Marketing Administration. Service and Regulatory Announcement, No. 107. March, 1950.

BIOGRAPHICAL SKETCH

Tsung-Chiang was born in Foochow, China, on April 17, 1930. He received a Bachelor of Agriculture degree in Agricultural Economics from Fukien Christian University in 1952. He received a Master of Science degree in Agricultural Economics from Michigan State University in 1955. In the same year he began graduate study for his doctoral degree at the University of Florida.

The writer was a school teacher in his native city in 1957. He joined the staff of China Textile Industries Corporation from [illegible] 1958. He resigned his job for advanced study in the United States. He was married to Chiang Wei-Ching [illegible] Wisconsin State University. He had a research assistantship in the Food and Resource Economics Department at the University of Florida.

He is a member of Farm Bureau.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Agriculture and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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